The Journal of the American Medical Association

VOL. XXIV. CHICAGO, APRIL 13, 1895. No. 15.

LECTURES.

LECTURES ON INTRACRANIAL SURGERY.

IV—ABSCESS OF THE BRAIN.

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Suppuration in the brain does not differ from abscess in other parts of the body, except in the symptoms which arise from the peculiar location of the pus. Formerly, abscess of the brain and cerebral softening were regarded as synonymous terms; but now we know that softening is the result of the death of brain tissue from interference with the blood supply—a purely passive process, the creamy mass possessing none of the characteristics of pus excepting the resemblance in consistency and color; on the other hand, abscess is the result of an active process, inflammation, and in the broken-down tissues are found the distinctive microörganisms of true pus, and the same rule for the treatment holds good as in abscess elsewhere; let the pus out as soon as its location can be determined.

MORTALITY.

Abscess of the brain, from a surgical standpoint, is more favorable than almost any other form of cerebral disease. The rule is therefore to operate always; and as early as possible. Death is certain without surgical interference—relief is sure if operation be not too long delayed. The mortality after operation is very slight—about 17 per cent. according to von Bergmann—as compared with a death rate of 100 per cent. without it.

ORIGIN OF ABSCESS.

Cerebral abscess is never idiopathic. It always come from infection, the sources of which are three in number:

1. *Trauma.*—It may originate from blows or falls upon the head, even when the skin has not been injured nor the bone fractured; though often a punctured or other fracture has been present, in which cases it is usually associated with meningitis. Following trauma the suppuration may be either diffuse (acute meningitis and cerebritis running on to pus formation and proving fatal within a few days) or circumscribed, the area of red, or inflammatory, softening growing more and more liquid in its center until it becomes simply a collection of pus. In this instance the pyogenic cocci may reach the injured tissue by direct infection through a wound on the one hand or through the circulation on the other.

2. *Embolism.*—The abscess may be due to impaction of pyogenic emboli from some distant focus of suppuration (as the lungs, especially gangrene, bronchiectasis and fetid bronchitis; ulcerative endocarditis; empyema, etc.); in which case it will probably be located near some terminal twig of the middle cerebral artery, especially the left.

3. *Infection by Direct Continuity of Structures.*—But most frequently intracranial suppuration is traceable to purulent inflammation near by, as from injury or disease of the bone. Of the latter we see a typical case in abscess accompanying inflammation of the mastoid cells and in otitis media suppurativa; here the pus microbes find an entrance from the neighboring focus—and the same is true in abscess of the anterior lobes where caries of the ethmoid is the primary trouble.

The method of extension is thus described by Moullin: (2d edition, p. 666).

"In many instances the inflammation spreads by direct continuity of structures, the bone first becoming inflamed and necrosed; the dura over it sloughs, and either the pus spreads into or through the arachnoid space at once, or the membranes become glued to each other and to the cortex by a protective inflammatory exudation before this can occur. There are, however, other routes almost as direct along which the infection may travel. It may spread down the internal auditory meatus, or through the hiatus Fallopii, or the aqueductus vestibuli, or it may extend along some of the numerous small veins (each surrounded by a peri-vascular lymph-sheath) which run between the middle and internal ear on the one hand and the dura and pia on the other. Some of these pass directly from the temporo-sphenoidal lobe to the dura covering the petrous portion of the temporal bone; others run through the squamo-petrosal suture and through the slit in the dura that lies by the side of the aqueductus vestibuli; others again lie in the small canals which connect the middle ear directly with the middle fossa of the skull; and not a few communicate with the middle meningeal veins and the superior petrosal and lateral sinuses."

The only unexplainable phenomenon connected with the formation of cerebral abscess has been brought to notice by Senn, viz., how the staphylococcus pyogenes aureus (or albus) which elsewhere causes only circumscribed suppuration, and which is the peculiar pus organism of otitis media and of suppurative osteomyelitis of the ethmoid or other bones, may in some cases be the exciting factor of a diffuse, septic leptomeningitis such as would result from infection with the streptococcus pyogenes or the streptococcus of Fehleisen — the suppurative meningitis following erysipelas.

LOCATION.

But whatever the cause, since intracranial suppuration is invariably fatal if left to itself, the indications are always 1, to locate the affected point and 2, to open the skull, evacuate the pus, irrigate the abscess-cavity and establish free drainage. So essential to success is this rule that when the dura is opened over the supposed seat of the abscess and no pus is found, it is advisable to thrust an aspirating needle into the brain in various directions until the

pus is located; that is, in cases of supposed abscess following injury or infection from a distant focus. I have often used a large needle in this way (even withdrawing some of the fluid from the ventricles) without apparent harm to the brain.

Great care must, however, be taken not to practice this extensive exploratory work in those doubtful cases which, instead of being cerebral abscess are thrombosis of the lateral sinus or pyemia from middle ear disease—cases which closely simulate abscess of the brain in their clinical picture. When the diagnosis is not certain the mastoid antrum must be first explored and free communication established with the external auditory meatus; by this procedure many cases of meningitis might be averted. But—in cases presumed to depend upon suppurative otitis media—if no pus is found in this preliminary operation, exploratory trephining should be practiced; the points of selection being a little above and somewhat behind the meatus (to expose the anterior surface of the petrous bone) or just behind the meatus and on the same level.

It is best, perhaps, to first examine the orifice of the mastoid vein, and if no evidence of thrombosis be found, to then make the opening in front, exposing the under surface of the temporo-sphenoidal lobe. The reason for this advice is that 95 per cent. of cerebral abscesses occur within a circle of an inch radius, the center of which is a point one and one-half inches above and one and one-fourth inches behind the center of the meatus auditorius externus. Rarely abscess is found in the anterior lobes or the cerebellum.

The pus may be, as regards the skull:

1. Subcranial—between the bones and dura;
2. Subdural—among the meninges;
3. Subcortical—in the substance of the brain.

SYMPTOMS.

The symptoms of cerebral abscess vary according to the rapidity of development and location of the point of suppuration. Very rarely the trouble is ushered in by a rigor and high fever, succeeded by delirium, vomiting, headache and other symptoms of acute meningo-encephalitis; this is what is called acute abscess, and follows injury or operation. Usually the symptoms are quite slow in making their appearance, as certain parts of the brain (like the apex of the temporal lobe, a favorite site of abscess) may for long contain an abscess of considerable size with no special symptoms to direct attention to its existence, the disease being suspected only when it begins to encroach upon more important structures either by pressure or direct irritation. When thus far advanced there will be found a subnormal temperature for a part of the day in most cases, together with more or less headache, and irregular fever.

In cases dependent upon traumatism there is commonly a latent period after the injury. This may, in rare instances, be as short as two weeks, but is generally much longer, even years occasionally elapsing before the disease causes trouble. In this period the patient is likely to become cachectic, more or less loss of memory accompanying the decline in bodily health, though the head symptoms may be so slight or so gradual in their development as to escape notice. Head pain is almost always present and may be quite intense; but I have operated upon one case of abscess of large dimensions (fully one-half of the hemisphere) where no pain whatever was ever felt; the location of the pain does not necessarily correspond to the situation of the abscess. The headache may be either general or local. Optic neuritis is a quite frequent accompaniment and the pupil upon the affected side may be dilated or fixed.

Only too often localizing symptoms are not present, and so when headache, drowsiness or partial paralysis make their appearance some time after an injury or during the progress of long-continued middle ear disease, the surgeon is compelled to resort to exploratory measures, operating in the one instance at the point of trauma (though abscess may really be far distant) and in the other at the point of selection already described. As a rule, it may be said that the chief evidences of abscess are subnormal temperature, irregularity of the pupils, and a dull, sluggish condition of the mental faculties, possibly diversified by unexplainable fits of irritability, with more or less headache, either localized or diffuse.

Ptosis, fixed mydriasis or paralysis of the ocular muscles indicate the temporo-sphenoidal lobe as the location of the abscess; and it is not at all unusual for more or less paralysis of the arm and face to be present from compression of the lower motor centers which are close by; with aphasia if in the left hemisphere. Hemianopia and occipital headache are the chief signs of abscess in the hind-brain.

When the abscess is located in the cerebellum, vomiting is added to the other symptoms; and when the middle lobe is affected, staggering (cerebellar incoördination) is also present usually. Abscess of the cerebellum is so uniformly due to middle ear disease that when suspicion of abscess exists in the history of a case of otitis media and trephining does not reveal the pus in the temporo-sphenoidal lobe, the surgeon should open the skull over the cerebellum and explore for abscess in this region.

DIAGNOSIS.

These symptoms occurring weeks, months or years after severe injury to the head, or following a chronic discharge from the ear, are sufficiently prominent to enable the surgeon to make a diagnosis; or at least to give him enough assurance of the probable existence of pus within the cranium to justify exploratory trephining. Nor is a localizing symptom necessary to determine the situation of the abscess in the majority of cases; the operator may here well rely upon his knowledge of the pathology of the disease and the surgical anatomy of the part involved. In every suspicious case the patient should be given the benefit of the doubt; and here, if anywhere, the surgeon is to be commended for being positive in his demand for operation and prompt in carrying conviction into effect.

Certain kinds of tumor resemble abscess in their clinical picture, but choked disc will be found present almost invariably in tumor, while it is not a frequent symptom in abscess. Besides, in tumor the absence of a cause of abscess may be regarded as highly important from a diagnostic standpoint. And last—subnormal temperature alternating with an irregular febrile record will not be found in tumor; but may be absent in abscess as well.

Pus in the mastoid antrum may give rise to all the symptoms of abscess (even optic neuritis) but there are generally some local signs that point to the osteal

disease. In case of doubt one should open the mastoid before trephining.

Thrombosis of the lateral sinus is quite similar in a general way but a chill precedes the other symptoms; the pain is located at the point affected; and a stiff neck, retracted head and tenderness or edema over the mastoid will assist in differentiating. Later, pyemia occurs. If doubtful between thrombosis and abscess the mastoid vein may be exposed before trephining; if active the sinus is not clogged.

The transition from a chronic to an acute abscess may be sudden from a blow upon the ear or head (as in the case of Mr. D., of which I will soon speak) or from exposure to cold and wet; and should not interfere with a proper diagnosis being made.

Cerebellar abscess is almost beyond the possibility of positive diagnosis; the symptoms being very indefinite. Severe occipital headache, persistent vomiting and retraction of the neck, with irregular variations in the temperature are suggestive of disease of the cerebellar hemisphere; and when arising in connection with ear disease are enough to warrant exploration.

OPERATION.

It is frequently necessary, as will be evident from the preceding remarks, to make exploratory trephining; which here is certainly justifiable. If the abscess is not found at the seat of injury in traumatic cases, if the brain project into the opening and is pulseless, there can be little doubt as to the existence of an abscess somewhere and, an aspirating needle must be inserted in various directions until the pus is found; in so using the needle the point must never be moved from one part of the brain to another without withdrawal, as important fibers would be injured; but by taking the needle clear out of the brain tissue and re-inserting it with the point guided in the desired direction little permanent injury can be caused.

In cases of middle ear disease the scalp is retracted as a large flap including the pericranium, and the trephine applied at the point already indicated, viz., one and one-half inches above and one and one-fourth inches behind the center of the external auditory meatus; if nothing is found on reaching the dura, the latter is opened and exploration made.

Moullin very properly says if no abscess is found in this anterior operation, either between the dura mater and the bone or in the substance of the brain, and there is no evidence of thrombosis of the lateral sinus even when the orifice of the mastoid bone is exposed the surgeon should not hesitate to extend his exploration, even at the risk of being called hazardous, but should separate the periosteum and muscular attachments from the occipital bone beneath the superior curved line and open the skull so as to explore the lateral lobe of the cerebellum. In many cases of cerebellar abscess, however, there is sinus thrombosis as well, and there must consequently be some danger of the one being overlooked when the other is found—so it is best to search for both in every suspicious case. If extra-dural abscess or thrombosis of the lateral sinus be found, the jugular vein must be at once tied to prevent *débris* getting into the circulation, as the only hope of saving life lies in thoroughly cleaning out the clot and removing the whole focus of the disease. (Operation for thrombosis of the lateral sinus will be considered more in detail in a subsequent lecture.)

When the abscess cavity has been located, a free incision must be made into it to obtain thorough drainage. Then, for the only time in cerebral surgery, an antiseptic solution may be employed; in every other operation a normal salt solution being used for irrigation, etc., after the point of exposing the dura has been passed. In abscess, however, the cavity should be thoroughly washed out with hydrogen dioxid followed by a solution of bichlorid of mercury, 1 to 2,000. A large rubber drainage tube is then introduced and the wound in the scalp closed with silkworm gut sutures except at the point of drainage. It is perhaps well to dust in a considerable quantity of iodoform or other drying antiseptic powder, before closing the scalp. Very great care is exercised in dressing, fresh sublimate gauze being applied in abundance, as further infection from without must be avoided.

The drainage tube is washed out twice daily for a time, especially if it becomes clogged; later, once daily is sufficiently often to dress the wound. Day by day as the wound fills with granulation tissue the tube must be drawn farther and farther out, care being taken not to let the external wound heal too speedily. Usually from two to three weeks will be required for the abscess to stop discharging.

During the operation the most scrupulous care is to be taken as to asepsis. The scalp must have been thoroughly scrubbed and cleaned with alcohol or sulphuric ether and sublimate solution, and the hands of the operator and assistants disinfected by scrubbing for six to ten minutes and immersion in saturated solution of permanganate of potassium, then in strong solution of oxalic acid and finally in sublimate solution for two minutes; or in the absence of these, soaked thoroughly in alcohol and then in sublimate solution. And during the operation, if any object be touched which has not been sterilized —the table, the pulse of the patient, a chair, the pillow, etc.—the hands must be washed again in the sublimate solution before touching the wound or any instrument. These are little points, you say? No, indeed! Too many surgeons, nowadays, are too careless in these little details; and a human life may depend upon the care with which seemingly trivial acts are watched by the operator; no assistant must be for a moment beyond the eye of the surgeon, or if necessarily so be compelled to wash again. There may be no pus in the brain, and carelessness will cause infection. It is especially in redressing the wound that I would urge the greatest care. Here the surgeon says to himself: "Oh well—I have already a purulent infection, the wound is a pus-producing one, so I need not be careful." Only too often have I heard such remarks from men who should know better. There are other germs besides the staphylococcus pyogenes aureus which is found in these abscesses, and the greatest care in aseptic details must be carried out in the dressing, or there will be contamination through carelessness and death will result when recovery should have occurred.

CASES.

As I have already stated, abscesses are occasionally not single. Kidd reports a case of double abscess in which the trephine was used in the frontal region and pus evacuated from an abscess; the patient died on the fourth day and the post-mortem examination revealed a second and larger abscess in the temporo-sphenoidal

lobe of the right side *without* (a rarity, indeed) disease of the petrous bone; the cause of the frontal focus was a recent kick of a horse—that of the posterior abscess unknown. A case quite similar gave one of the two fatal results I have had in my own operations for abscess:

Chas. D., aged 32 years, was struck upon the right side of the head by a rapidly moving car in Kansas City, on the night of Sept. 18, 1891. He was unconscious for a little time, but recovered and went about his work next morning, though his employer noticed that he acted strangely—"dazed." This condition continued until Oct. 11, 1891, when he went to bed on account of an increasing head pain, especially marked at the junction of the parietal and occipital bones of the right side—the place of injury. He developed fever, had a severe general convulsion, repeated chills at irregular intervals and finally became delirious and semi-comatose. I first saw him October 18 in consultation with his physicians, Drs. C. D. McDonald and G. E. Mosher. I advised trephining at the point of injury and also over the temporo-sphenoidal lobe of the opposite side on account of a chronic ear discharge, though there were no localizing symptoms pointing to trouble there—it was merely advice founded upon general principles. At 4 P.M. when arrangements were completed the patient was in profound collapse, the pulse intermittent and weak, extremities cold, eyes turned strongly to the left and insensible to light; operation was therefore postponed, as it was seen that death on the table would be the effect of our work.

Under stimulants, etc., he improved somewhat; and on October 25, I opened the skull at the spot injured. The dura bulged prominently into the hole and was entirely without pulsation. On turning back the dura a large area of softened brain tissue presented; which upon incision gave a considerable amount of pus. This cavity was scooped out and the surrounding red softening gently curetted with a sharp spoon, a Paquelin cautery being necessary to control the sharp hemorrhage. Palpation showed quite extensive softening anteriorly, but not broken down tissue; so it was left. After irrigation a drainage tube was inserted and the scalp closed. As the man was in extreme collapse from the bleeding, no further exploration was deemed advisable. There seemed to be quite an improvement that day in his mental and general condition though shock was profound. On the 27th we dressed the wound, finding fully an ounce and a half of pus discharged. Fresh dressings were applied and the patient made easy, but he died the next morning apparently from exhaustion.

The autopsy showed another abscess, evidently of months standing in the left temporo-sphenoidal lobe due to caries of the petrous bone. The only ante-mortem evidence of this abscess was the chronic discharge from the middle ear with an occasional sharp pain in the occipital region of the left side.

As illustrating the fact that the abscess may be located far away from the site of injury, I quote my other fatal case from my record book:

Ed. F., carpenter, age 26, was shot by pistol, the ball entering one and a half inches to the right of the saggital suture and two and a half inches posterior to the coronal. It emerged (or the major portion of it as afterward proved) at the saggital suture, cutting the superior longitudinal sinus. The hemorrhage was consequently profuse and would have proved fatal had not a bystander crowded a handkerchief into the wound and applied firm pressure. Fifteen minutes after the accident, I found him upon the floor in an incredibly large pool of blood, pallid, limp and helpless but conscious and talkative. This was at 1 A.M. I packed the wounds with gauze and had him removed to the City Hospital. At 9 A.M. I opened the wound and found the bone badly shattered between the two openings which were therefore made one by the bone forceps; a portion of the bullet was found lodged between the plates of the parietal bone. All the broken-down brain tissue, amounting to a large teacupful, was trimmed away and after irrigation with water at 120 degrees, the cavity was packed with borated gauze. The patient soon regained consciousness. On the second day evidences of inflammation arose and a hemiplegia gradually developed—*but upon the same side as the wound*, a symptom we explained by saying it was a case in which there was no decussation of the motor fibers in the posterior pyramids. After a few days the inflammatory signs disappeared, the wound healed nicely and the thirteenth day the man was sent to his home. He did well for a number of weeks, but the paralysis did not disappear, I thought because the motor area was destroyed. But he suddenly developed symptoms of abscess and died. The autopsy showed the cerebrum of the injured side in excellent condition; so far as any lesion here was concerned he was well. But a small fragment of the bullet pierced the falx cerebri a little above the corpus callosum and lodged in the white matter of the side opposite the injury, causing a hemorrhage just external to the corpus striatum—hence the hemiplegia of the same side as the primary injury. This clot became the seat of an abscess which finally ruptured into the lateral ventricle, broke down the septum lucidum and caused death.

In this case the subject practically recovered from the original wound and from the operation; and the man would have been restored to his previous condition of health had not the fragment of ball caused the abscess in the opposite hemisphere. The location of the abscess I had no means of determining before death.

It has been said that abscess of the frontal region can not be diagnosticated. While this is true, there are certain cases in which we *suspect* abscess in the frontal convolutions and here exploratory operation can be made with some degree of propriety. Three patients have been under my care for frontal abscess. One case (subcortical) in which aphasia became a symptom as the disease progressed, would not consent to operation and died in the hospital; the autopsy showed the correctness of the surmise as to the location of the suppuration. The other two submitted to operation and recovered. The first I wish to report presented this history:

Dora V., of Denver, Colo., aged 28 years, prostitute, was admitted to the hospital Sept. 21, 1893. She complained of an intense severe headache, located just to the right of the middle line, two and one-half inches above the orbit; this pain began about six weeks before, and continually grew worse. Her physician regarding the case as one of gummy tumor, sent her to me for its removal, with the statement that for about ten days the mind had been seriously affected. Upon examination she appeared stupid, dull, with dilatation of the right pupil; and there was some tenderness at the point of greatest pain. Her temperature varied from 97 to 100 degrees during the next four days, so a diagnosis of abscess was made. On September 26, assisted by Drs. Thrush and Maxson, I reflected the scalp at the point supposed to be affected, and made an opening about one inch in diameter with the gouge. Upon removing the outer table there appeared evidences of bone inflammation, and when the inner table was pierced pus came welling up from within the cranium. The abscess was subdural, but adhesions everywhere had prevented general meningeal suppuration; the cavity was therefore irrigated but not curetted. Free drainage was established and the usual dressings applied. September 27 the record says: "Doing nicely, no pain, slept well, mind clearer. Temperature all day, 99.5 degrees." She continued to improve rapidly, the discharge of pus ceased on October 28, and two days later she was allowed to go. The cause is unknown, but is presumed to be syphilis probably aggravated by a blow, though no history of the latter could be obtained. All her mental symptoms vanished immediately after operation, and at last account she was still well.

The second case was subcranial. The condensed history is as follows:

Mrs. B. D., patient of Dr. J. E. Dennis, 28 years old, I saw Dec. 16, 1891, on account of severe headache of several weeks duration, which resisted every anti-neuralgic remedy, the doctor desiring operation for the relief of pressure on the brain, the symptoms certainly indicating such a condition. A careful examination failed to show any disease of the ear or the nose; the retina was slightly congested; pupils very sluggish; slight ptosis of right lid. No cause for the pain could be discovered unless it was due to tumor or abscess. There being no localizing symptom, I declined to operate; the pain, indeed, was referred always to one point, but I did not then feel that pain alone would justify exploration.

At midnight, December 18, I again saw her in consulta-

tion. The pain, she said, was unbearable—so great she would violently beat her head against the wall unless guarded. Her temperature was 100 degrees and she was delirious most of the time. On the evening of the 19th she was in a critical condition—temperature 96 5 degrees, heart action feeble and irregular, a low form of delirium still present; as death appeared inevitable I consented to trephine—upon both sides if necessary.

December, 20, at 1 A.M., I made an incision along the line of the eyebrow to the base of the nose, dissecting the tissues upward sufficiently to allow the use of a gouge. At a point about one inch above and a little internal to the orbit I opened the frontal sinus and then attacked the internal table. As soon as the chisel entered the skull, pus began to pour out and when a sufficiently large opening was made fully one and a half ounces escaped. The abscess was between the bone and dura; with the probe dead bone could be felt, believed to be necrosis of the ethmoid, so I gently curetted with the sharp spoon but hemorrhage caused me to desist. I washed out the cavity with bichlorid solution and with Marchand's peroxid of hydrogen and finally filled in with much iodoform and inserted a drainage tube.

My record for January 3 says: "The pain ceased immediately after the operation, and the general condition improved rapidly. The wound has been dressed every second day, the cavity being thoroughly irrigated with weak sublimate solution and then with hydrogen peroxid and filled with 10 per cent., iodoform emulsion, under which treatment pus has ceased discharging." The iodoform emulsion was used because I presumed the ethmoidal necrosis to be tubercular.

On January 15 the external wound was healed, but a little pus was still discharging through the nose.

I have frequently seen this patient since and there has been no further trouble from the necrosis—if there was a necrosis—and her health is perfect. There never was any evidence of syphilis in this case.

I do not give histories of cases from middle ear disease—they are too common, but as a result of my own experience, I can well counsel exploration in every case of suspected abscess of the brain; with the expectation of a favorable result in a large percentage of operations.

ORIGINAL ARTICLES.

THE DISEASE RESISTING POWERS OF THE BODY.

A REVIEW OF THE FOUNDATIONS OF NUCLEIN AND SERUM THERAPY.

Read before the Biological Society of Chicago University, Feb. 20, 1895.

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When it was shown that bacteria were the cause of certain diseases, it was believed for a time, that if these bacteria by any means found an entrance into the body, disease must follow. Until quite recently, popular writers on these questions left this impression with their readers.

Pasteur noticed that in case an animal recovered from a germ-caused disease, the germs disappeared from the blood and tissues. He also observed that, in some cases at least, after an animal had recovered from the attack it was more or less immune or insusceptible to the same disease. That this immunity following one attack was true for many of the contagious diseases was indeed a matter of common knowledge. Early in his investigations Pasteur noticed that some animals were readily affected by his microbes, while others were entirely immune; again, that in some cases, a young animal could be infected but not an older one. Pasteur studied these matters and worked out an explanation for them. He believed that his microbes were in some respects very delicate creatures, demanding particular kinds of foods, without which they could not grow. He noticed that in his flasks the bacteria grew for a time, then ceased growing, although a considerable amount of food remained unused. He concluded that their growth was stopped on account of the exhaustion of some essential part of the food. He noticed that other germs might grow in these flasks after one species had ceased to grow. Reasoning in this manner, he thought he saw a probable explanation for recovery and immunity. A few anthrax germs had been injected into an animal and after some hours an examination of the blood showed that each drop contained thousands of these germs, and yet a few days later, in the favorable case where the animal recovered from the disease, the blood when examined contained few, or it may be, no germs at all.

Pasteur reasoned that here the animal had served as a culture flask, and with the same result, as soon as certain things in the animal's body were exhausted the germs ceased to multiply and disappeared. On this, the "exhaustion theory," as it is called, Pasteur based his hope for preventing and curing the contagious diseases. Time will not suffice to give the details of his work on vaccines.

In brief, his method was to take an attenuated germ, one that by exposure to unfavorable conditions had been weakened and enfeebled. With a small quantity of this culture, he would then inoculate an animal. This feebly growing germ, or vaccine, would gradually and without serious harm to the animal exhaust that particular substance necessary for its growth. Having done this, the germ would die and disappear. The animal having recovered from its vaccination fever, would then be proof against an attack of the most malignant germs of that kind. The first two diseases studied by Pasteur in this way yielded brilliant results. By his method, with attenuated cultures of anthrax, and chicken cholera, he was able to make very susceptible animals wholly immune to the most virulent forms of these diseases. He concluded that the method could be universally applied, and made the remarkable statement that, "it is possible for man to eradicate every contagious disease from off the face of the earth."

Hundreds of workers attempted to apply this theory to the various bacterial diseases. Gradually it was seen that the method would give satisfactory results in but few diseases, and that the theory was a poor one.

In the same year that Pasteur's exhaustion theory was put forward, another and opposing one was advanced by Chauveau. Chauveau reasoned that bacteria ceased to grow in our flasks and test glasses, not because some particular food is exhausted, but for the same reason that a higher animal or plant when confined, is gradually poisoned by its own excretions. Whenever the excretory products of the bacteria reach a certain amount, they cease to grow, although there may be an abundance of food. It had long been known that this was true for some of the higher

plants. Pasteur himself had shown that the yeast plant ceased to grow whenever the amount of alcohol which it produced reached 15 per cent.

Chauveau explained that an animal recovered from an invasion of bacteria, if it could survive until these excretory products accumulated in such quantities as to gradually hinder and finally wholly arrest their growth. Immunity, he said, was due to the fact that these excretory bacterial products were very slowly eliminated, and as long as they remained in the body they protected it from an invasion of the germs. This theory was widely accepted and until the last two years was the most popular one. It was essentially on this theory that Koch based his attempt to cure tuberculosis with tuberculin, which is essentially an old filtered bouillon culture of the tubercle germ. So Klebs introduced diphtheridin for diphtheria.

The theory underlying these attempts at cure was to introduce into the body, those products which arrest the growth of the germ in our flasks and tubes, and by so doing to stop the growth of the germs already in the body. These attempts at cure were failures, and we now believe that they were wrong in theory.

Pasteur's facts were all right; the germs do disappear with recovery from the disease and there is generally, more or less immunity. How can we explain these things? These are all-important questions, for when we know how the body destroys disease germs then it is probable that we can discover some means with which to assist in the fight against these invaders.

"As early as 1872, Lewis and Cunningham demonstrated the fact that bacteria injected into the circulation rapidly disappear.

"In 1874, Traube and Gschiedlen found that arterial blood, taken under antiseptic precautions from a rabbit into the jugular vein of which 1½ c.c. of a fluid rich in putrefactive germs had been injected forty-eight hours previously, failed to undergo decomposition for months. These investigators attributed the germicidal properties of the blood to its ozonized oxygen. Similar results were obtained by Fodor and by Wysokowicz. The latter accounted for the disappearance of the germs, not by supposing that they were destroyed by the blood, but that they found lodgment in the capillaries.

"The first experiments made with extra-vascular blood were conducted by Grohmann under the direction of A. Schmidt in his researches upon the cause of coagulation. It was found that anthrax bacilli, after being kept in plasma, were less virulent, as was demonstrated by their effect upon rabbits. Grohmann supposed that in some way the bacteria were influenced by the process of coagulation.

"In 1877, Fodor made a second contribution to this subject, and in this he combatted the retention theory of Wysokowicz. One minute after the injection of 1 c.c. of anthrax culture into the jugular vein, in eight samples of blood, Fodor found only one colony of the bacillus. Then he took the blood from the heart with a sterilized pipette and added anthrax bacilli to it. This was kept at 38 degrees C., and plates made from time to time showed a rapid diminution in the number of germs; after a time, when the blood had lost its germicidal properties, the number of germs began to increase."

In 1888, Nuttall showed that defibrinated blood had this germicidal power. Since then Nissen, Behring, Buchner, Haliburton, Hankin, Bitter, Christmas and others have worked on this question. All of these observers find that the blood, within or without the body, has germicidal powers. They find that this germicidal substance can be precipitated with alcohol, that it can be dried and when redissolved is as active as before. Prudden found that ascitic and hydrocele fluids restrain the development of certain germs. Other observers have shown that the humors of the eye have antiseptic properties. Some of the experimenters conclude that the germicidal substance is serum albumin, others that it is a globulin, while all agree that it is some proteid.

These experiments demonstrated the fact that the body had the power to kill at least some bacteria, but gave us little if any insight into how it was done. About this time, that is, in 1884, Metschnikoff brought forward an explanation that seemed plausible, and has had and still has many advocates. He believes that the white blood corpuscles together with the cells of the spleen, certain glands, and the cells lining the blood vessels have the power to take up and destroy the germs. All of these cells have the power to put out pseudopodia. It had been known for a long time that when small particles were injected into the blood, the white blood cells would pick them up and engulf them. It was also well known that when a part of the body was injured, the white blood cells flocked to the inflamed part in large numbers.

Metschnikoff concluded, that the function of these cells, which he named phagocytes, is to watch the avenues by which pathogenic germs may enter the body, and on their approach to engulf or swallow them and by a power of digestion to destroy them. The theory attracted universal attention and admiration. He also attempted to explain the migration of the white cells to a wound. He found that certain substances attracted the cells, while certain others repelled,—that they did not swallow every particle that came in their way but had a selective power—this positive and negative chemiotaxis as he calls it, is used by him to explain many of the phenomena connected with cure and immunity. He finds that certain bacteria attract and in turn are destroyed by the phagocytes while certain other more virulent ones, repel the phagocytes and so are left free to multiply, and harm their host. It was soon shown, however, that blood outside the body, blood in which the phagocytes had been killed by freezing, still had the power to destroy bacteria.

Some observers even went so far as to say, that Metschnikoff was wholly wrong; instead of the phagocytes swallowing and destroying the germs, these had invaded the phagocytes and were destroying them.

Metschnikoff, however, has brought forward evidence by means of stains, enabling him to show the difference between a living and a dead germ, to show that in some instances at least, the phagocytes do take in and destroy the bacteria. In certain other cases, however, as in gonorrhea, and mouse septicemia we must conclude from the enormous number of the germs present in a single phagocyte, and from their staining, that they have invaded the phagocyte, and multiplied at its expense.

Some three years ago, Dr. Vaughan and myself began some experiments on this question with the following results. In a paper before the Pan-Ameri-

can Congress, at Washington, we stated our views as follows:

From a careful and critical study of the investigations that have been briefly reviewed, we have come to the following conclusions:

"1. The serum albumin is not the germicidal substance in blood serum. As has been stated, either this must be true, or the experiment by which Buchner demonstrated that an active pepsin does not destroy the germicidal action of blood serum must have been an error; because peptic digestion readily and completely converts serum albumin into peptones, and we know that peptones are especially favorable to bacterial growth.

"2. The germicidal substance must belong to the proteids. Otherwise it would be difficult to explain the fact that a temperature of 55 degrees C. renders blood serum inactive.

"3. The only proteid likely to be present in blood serum and which is not destroyed by peptic digestion is nuclein.

"Having reached these conclusions, the following questions naturally present themselves:

"1. Is there a nuclein in blood serum?

"2. Has this nuclein, if there be one, germicidal properties?

"These questions we have attempted to answer.

"Dogs and rabbits were the animals from which the serum was obtained. Healthy animals that had not previously undergone any experimentation were selected. In each case the animal was bled to death. The flask containing the blood was placed in the ice-chest and allowed to remain for twenty-four hours. By the expiration of this time, a wine-colored serum had separated. This serum was poured into a second sterilized flask and about ten volumes of a mixture of equal parts of absolute alcohol and ether were added. This produced a voluminous precipitate that was nearly white. This was allowed to stand twenty-four hours, and in some cases much longer, the alcohol and ether twice, or more often during the time, being decanted and replaced by equal volumes. Then the supernatant fluid was decanted and an equal volume of 0.2 per cent. solution of hydrochloric acid containing active pepsin was added, and the flask placed in an incubator at 38 degrees C., and the digestion was continued until the fluid failed to respond to the biuret test for peptones. Each time this test was made, the fluid was decanted from the undigested portion and replaced by an equal volume of fresh digestive fluid. In some instances the flask containing this fluid was allowed to stand in the incubator for several days. This was not necessary in order to complete the digestion, but was allowed as a matter of convenience. In all cases the digestion was prompt and proceeded to a certain point, when it ceased altogether. The undigested portion was small in amount and grayish in color. This was collected on a small sterilized filter and washed first with 0.2 per cent. solution of hydrochloric acid, and then with alcohol. After the washing with alcohol, the filter was allowed to stand exposed to air for half an hour or longer, in order that all of the alcohol might pass through or evaporate. The precipitate was then dissolved in a sterilized solution of potassic hydrate. The strength of this alkalin solution usually employed was 0.12 per cent. Usually this solution contained in addition to the alkali 0.6 per cent. of sodium chlorid. In some instances a solution containing 1.2 grams of potassic hydrate, 6 grams of sodium chlorid, and 1 gram each of sodium bicarbonate and disodium hydrogen phosphate to one liter of water was employed as a solvent. The solution was filtered through a Chamberland tube and received in a sterilized flask. The solution thus obtained was perfectly clear, colorless, and did not respond to the biuret test.

"We have now answered the first question. Blood serum contains a nuclein. We hope to investigate at some time in the future the relation between this nuclein and fibrin-ferment.

"The origin of the nuclein found now for the first time in blood serum is an interesting question. Does it come from the disintegration of the polynuclear cells, or shall we regard white blood corpuscles as unicellular organs whose function it is to secrete this nuclein?

"In proceeding to determine whether or not this nuclein has germicidal properties, the solution was distributed in sterilized test-tubes, 5 c.c. being placed in each tube. It should be stated that in dissolving the nuclein, the volume of the solvent employed was in all cases the same as that of the blood serum from which the nuclein was obtained. These tubes were inoculated with different germs and plates made at varying intervals of time, in order to test the germicidal action. One and the same platinum loop was used in the preparation of each plate."

A number of experiments were then given in detail, showing that this nuclein had very decided germicidal power.

"We have made many other tests of the germicidal action of the nuclein obtained from blood serum, but as all of them gave practically the same results, further repetition is unnecessary.

"The fact that the germicidal constituent of blood serum can be isolated has an important practical bearing. Blood serum therapy has pronounced disadvantages, on account of the large amount of the fluid which must be injected. Nuclein therapy now promises to enable us to avoid this difficulty, and possibly the near future may find us using this agent in the treatment of disease. The nuclein may be obtained from an animal rendered immune to diphtheria, and a sufficient quantity of this injected into the blood or under the skin of a child suffering with this disease may effect a cure, but we will not prophecy. The future will tell us what it has in store when the future shall have become the present."

Since this was written, some two years ago, nuclein has been used extensively in the treatment of tuberculosis, and as we think with remarkable success. This work on the germicidal power of the nucleins has been confirmed by Kossel and others.

It seems to me that we have found an explanation that covers all the facts claimed by those who hold the phagocytic theory, as well as those who hold that the fluids of the body are its defenders.

Some one has suggested that the white blood cell is an unicellular gland whose business it is to secrete a germicide. As is claimed by Metschnikoff, there are obvious advantages to the animal in having the germicidal constituents of its blood (partly) in the form of amœboid bodies. Concentration at a desired place can be more easily accomplished, and the walls of the arteries and other tissues may be traversed without injury. But these cells do not eat and digest the invading bacteria. There are reasons for believ-

ing that they have no power to retard the progress of the invading bacteria until the constituents of the cells pass into solution.

Metschnikoff now regards nuclein as the germicidal substance in the blood. Suppose that it is shown that those indefinite substances which Hankin calls Defensive Proteids, Buchner Alexines, and Poehl Spermine, are nucleins, and that this substance is the one germ killing portion of the body, what have we gained?

How are we to explain the fact that of two individuals, living under the same circumstances, possibly of the same parentage, exposed to the same infec tive disease, the one takes it, the other escapes; or, both taking the disease, in the one, there is recovery and immunity to subsequent attacks, while the other dies?

How explain that at one age an individual is susceptible and at another immune to the same disease? That one animal is immune and another species very prone to die from a given germ? And above all how can we help the body in its ceaseless fight against disease germs? Some of the questions are as yet unanswerable, but day by day we are getting more light on these problems.

I have, so far, spoken only of the germ destroying powers of the body. It may be necessary to point out that in avoiding or recovering from disease, the body has to deal not only with germs, but also with their products.

It seems probable that the harmful effects of germs are not, as a rule, due to their mere presence, but principally to the poisonous products which they elaborate. In the case of tetanus the germs are found only in the neighborhood of the wound, while their effects are manifested, it may be, in every nerve and muscle in the body. So in diphtheria, the germs are practically confined to the upper air passages, and yet we find the deleterious effects of the disease in every organ of the body. These effects may be produced experimentally by injecting the filtered culture of the germ, without there being a single germ in the body. The paralyses of diphtheria, or the tetanic conclusions of tetanus, can be produced at will in the laboratory with germ-free cultures.

These poisonous germ products, whether produced in our test tubes or in the body are called toxins. It is evident that if a child suffering from a severe case of diphtheria is to recover from the disease, it must be able, not only to destroy the germs themselves, but also to dispose of or destroy the toxins produced. The substances capable of destroying these soluble poisons are known as antitoxins. What are these antitoxins?

It may be well to point out, that the phenomena with which we are here concerned can not be explained, as was once supposed, by any theory of toleration. We know that there are many poisons, such as nicotin, arsenic and morphin, which when given in gradually increasing doses induce a tolerance on the part of the tissues so that eventually, many times the normal lethal dose may be taken without any serious manifestations. It can be shown that this effect is not due to any increase in the power of the body to destroy these drugs; in fact this power decreases. Not so, however, with the bacterial toxins; these are actually destroyed or rendered inert.

We take six guinea pigs, and give to each of them 1 c.c. of this diphtheria toxin. This toxin has been tried on some twenty or thirty guinea pigs and is uniformly fatal in one-half c.c. doses. In a short time after injecting the toxin—on the opposite side of the body we inject into one of these pigs one-tenth of a c.c. (one drop) of this antitoxin, in another two-tenths, in a third five-tenths. The remaining three we leave with the toxin alone. I am describing experiments just as they were made in our laboratory some three weeks ago, and with these substances which I have here.

In forty-eight hours we find that the three pigs which received the poison alone, are all dead; the three receiving both toxin and antitoxin are alive and well. We take six more pigs. Into two of these we inject to-day one drop each of the antitoxin, twenty-four hours later we inject 1 c.c. of the toxin. These pigs never show at any time any symptoms of disease.

In a test tube we place 2 c.c. of the toxin and 2 drops of the antitoxin; after standing one hour one-half of this mixture is given to each of two pigs, these also show no sign of disease. The remaining pigs are given 1 c.c. each of the toxin and as in the preceding experiment are dead within forty-eight hours.

These experiments may be continued until many times the fatal dose of toxin is given, but if an appropriate quantity of the antitoxin is administered, no harm comes to the animal. Here there is a poison destroying power. What do we know of it? and how can the substance be produced?

We find here, just as when we study the bacteria themselves, that for a given germ or its toxin, certain animals are quite susceptible; others withstanding large doses of germ or toxin or, as we say, are immune. This immunity may in certain cases be borrowed from one animal and given to another. Thus one drop of the blood of a dog or frog, animals naturally immune to anthrax, if injected into the white mouse will effectually protect it against an inoculation of the anthrax germ. It makes no difference whether the drop of blood is injected several days before, or some hours after the inoculation with the germs. This, one experiment, and there are many similar ones, would at once suggest to us that the problems of cure and of immunity are closely connected, if not identical.

Now immunity may be natural or acquired. "Natural immunity may be peculiar to the species or race, or to the individual. An example of natural immunity is that of the domestic fowl to anthrax. As has been shown by Lazarus and Weyl, the chick, even at the time of coming from the shell, is immune to the most virulent culture of the bacillus anthracis. It is true that this animal may be made susceptible to anthrax, but this is an artificially-induced susceptibility. The immunity is natural to this bird at every period of its life. Another example of racial immunity is that of the frog to anthrax. This animal can also be rendered susceptible, but again it is true that the susceptibility is artificial and the immunity is natural. Racial immunity must be inherent in the parent cell.

"The natural immunity, which is peculiar to the individual, usually comes with adult life. The young are susceptible to a given disease, but adults of the same species lose this susceptibility and become immune. The young rat is susceptible to anthrax, while the adult is naturally immune, but can be rendered susceptible by exhaustive exercise. The child is highly

susceptible to scarlet fever and diphtheria; while the adult, though not wholly immune to these diseases, loses very much in susceptibility and is likely to become infected only when greatly reduced in vitality or after prolonged and aggravated exposure to the poison." In addition to the natural immunity due to race or age we have artificial or acquired immunity, as in the case of the mouse previously mentioned.

In 1880 Pasteur first showed that succeptible animals might be made more or less insusceptible to a contagious disease, and from that time to the present this artificial, or acquired immunity, has been the most interesting and important of bacteriologic problems.

Do natural and artificial immunity differ in degree only or in kind? This is an important question and one as yet undecided. The majority of investigators, following the lead of Behring, say that they differ in kind, that the germicidal and antitoxic powers are two different things. This is possibly true, and yet there are facts going to show that these are questions of degree only. In the last three weeks we have shown in our laboratory that nuclein from the yeast cell, has antitoxic as well as germicidal powers. A series of sixteen guinea pigs were treated for several days with yeast nuclein in varying amounts; they were then inoculated with twice the fatal dose of diphtheria toxin. Those pigs which had received doses of less than 2 c.c. of the nuclein, together with the control animals died; these receiving larger doses were not affected by the poison. The experiments were repeated with the same results. In a similar manner, rabbits have been made immune to tuberculosis and to pneumonia. The immunity to pneumonia is noteworthy, as these animals are very susceptible to the germs of this disease.

Aronson has shown that the blood of the untreated white rat has considerable antoxic power against the diphtheria toxin, Behring and Wernicke to the contrary notwithstanding. Guinea pigs that had been treated with such blood showing marked increase in their resistance to diphtheria poison.

You will have noticed that all the work I have quoted has been the outcome of theory, and nowhere is the value of the scientific imagination shown better than in the results of bacteriology. "Again and again it has been shown that the value of a theory does not wholly depend upon its truth, but is rather to be measured by the fruitfulness of the lines of investigation that it opens. Indeed, a theory may be wholly erroneous and yet it may lead to most important discoveries."

Our theories of immunity, of the relation of acquired to natural immunity will have important bearings on the future of this work. At present, however, the attention of bacteriologists is attracted to the brilliant results that have been obtained in artificial immunity. It has been demonstrated, for example, that a horse, an animal very susceptible to tetanus, can be made so immune to the disease that it will withstand several million times as much of the tetanus toxin as would kill another and untreated horse.

The results in the treatment of diphtheria have been such as to elicit worldwide interest. Among the first workers in this line was Ehrlich. At that time it was impossible to obtain the bacterial poisons, toxins, with any degree of uniformity in their poisoning power. So that Ehrlich selected two poisonous proteids or toxalbumins that had been obtained from the higher plants, as he could get these in relatively large quantities and with uniform toxic powers. These substances were ricin, obtained from the castor oil plant, and abrin from the jequerity bean.

This substance, ricin, is the most powerful poison we know. The contents of this bottle, 1 gram, 15 grains, Ehrlich estimates is sufficient to kill 1,500,000 guinea pigs. By giving his animals very minute and gradually increasing doses of these poisons; now in food, again hypodermically, and again by rubbing a weak solution on the conjunctiva of the eye, he was able at last to get them so immune that they would withstand several hundred times the fatal dose for an untreated animal.

He showed the best and quickest way to secure this immunity, and also the very important fact that his animals rendered immune to one of the poisons, say ricin, showed no immunity to the other one but were killed by it in the same dose that was fatal to the untreated pigs. Ehrlich went further, and showed that his animals did not merely tolerate the poisons, but destroyed them. He was indebted to Behring and Kitasato for this idea, they having in the meantime made the fundamental discovery that the immunity in diphtheria and tetanus was based upon a certain ability of the blood to neutralize the bacterial poisons. With this in mind, Ehrlich at last found that such a substance existed in his immune animals. These substances he called anti-ricin and anti-abrin. This discovery was the basis for all that we know of antitoxins.

Behring and Ehrlich next established the fact that the blood taken from immune animals rendered other animals immune. Discoveries now followed each other in rapid succession. Ehrlich demonstrated that the offspring of an immune mother was for a time immune. Further, that the immunizing or antitoxic substance was present in the milk of the the immune mother, and could be transmitted in the milk of an immune nurse, even when the nursling was no relation to the nurse, and the offspring of very susceptible parents. This gives us an explanation for the well-known, but heretofore little understood fact, that the suckling is more or less immune to several diseases to which it is very susceptible after weaning, as scarlet fever, measles, etc.

Further experiments led to a method for quantitatively estimating the value of the antitoxins, and the duration and degree of the immunity. The results of these discoveries are far reaching. By appropriate treatment we can give an animal such a high degree of immunity to a certain disease, that a relatively small quantity of its blood or blood serum, will contain sufficient poison destroying power, or antitoxin, to neutralize all the poison produced in an ordinary case of this disease. The blood serum of this immune animal we can borrow without detriment to the owner; we can bottle it, preserve it, if need be send it thousands of miles and there give its hoarded strength to one in need.

The method of immunizing animals against tetanus and diphtheria has been published so widely that I pass it by. As to the results of the antitoxic treatment in these diseases I may say, in brief, that the mortality in tetanus has been reduced from 80 to 20 per cent. In diphtheria, an average of many estimates shows a death rate diminished one-half under

this treatment. Behring believes that the mortality will not exceed 5 per cent. if the treatment is begun within forty-eight hours after the attack. Roux holds that the treatment is not very effective in those cases complicated by a streptococcus infection. But these figures, good as they are, a saving of one-half of the children who die of this dread disease, do not nearly represent the value of antitoxin. Its greatest promise is in the way of immunity, prophylaxis. We will have little need of a cure for diphtheria if every child exposed to the disease can have an injection of antitoxin and thus escape an attack. This result is promised by this new remedy.

Now to return to a question previously raised, How do the antitoxins neutralize or destroy the toxins?

We have seen that when a lethal dose of toxin is injected it fails to have any harmful effect, if, at the time a sufficient quantity of antitoxin is injected. The results are the same whether we mix the antitoxic serum with the toxin and inject both together, or we inject them separately in different parts of the body, or finally, whether we inject the antitoxic serum twenty-four hours before injection of the poison. It is quite different, however, if we inject the antitoxin some time after the injection of the poison. The longer we delay the more unfavorable is the prospect of cure, the greater is the quantity of antitoxin required, and the more uncertain becomes the result.

Behring and his followers hold that toxin and antitoxin chemically neutralize each other and are both changed or destroyed in the process, just as when an acid and a base form a neutral salt—unite and neutralize each other. But there are, possibly, other explanations of this phenomena.

Many experiments go to show that when we mix toxin and antitoxin in test tube and then inject the mixture into an animal the toxin is destroyed but some antitoxin remains, capable of protecting the animal against small doses of the poison subsequently injected.

On the other hand, if the toxin alone is destroyed, we should expect that in our test tube mixtures, after a certain length of time, all the toxin would be destroyed and the antitoxin remaining would be capable of destroying a fresh quantity of the toxin—just as pepsin is capable of converting an indefinite amount of proteid into peptone. But experiments fail to justify any such conclusion.

These and similar experiments lead us to doubt the direct poison destroying of toxin by antitoxin. If that were true it should make no difference, except in quantity, at what stage of the disease we injected our antitoxin. We have seen, however, that it does make a great difference, often requiring in diphtheria five hundred times the dose to save an animal twenty-four hours after infection as before. The dose needed to cure in tetanus is a thousand million times the immunizing dose. Buchner carried out the following ingenious experiment: Ten white mice and ten guinea pigs were given injections containing 1-10 mg. of a tetanus toxin. As was to be expected, all the mice died with pronounced symptoms of tetanus poisoning. The guinea pigs lived, only a few of them showing transient symptoms of the disease. In the second experiment, twenty-three mice and twenty-three guinea pigs were used. Each of them received 14 mg. of tetanus poison, one hundred and forty times the amount which in the first series was sufficient to kill the mice. But with the tetanus toxin, 1.35 mg. of an antitoxin had been mixed. Through this quantity of antitoxin the activity of the tetanus poison was almost destroyed. Nine of the mice were unaffected, eleven showed slight symptoms of the disease, while only three died.

As in the previous series 1-10 mg. had proved uniformly fatal to the mice, we must conclude that in this experiment the larger part of the toxin, certainly 13.9 mg. had been destroyed, otherwise the remaining 1-10 would have certainly killed the animals. Now exactly the same dose of toxin and antitoxin is given the twenty-three guinea pigs.

The previous experiment has shown that 1-10 mg. of the poison has but little effect on the guinea pig; this experiment seems to show that the antitoxin present is sufficient to destroy all but 1-10 of the poison in the mixture; hence we should expect to find little if any effect on the guinea pigs. On the contrary, eight died of marked tetanus, twelve showed chronic tetanic symptoms, and only three remained unaffected; showing conclusively that the antitoxin could accomplish results in the body of the mice which it could not in the guinea pig.

A study of this and other experiments, it seems to me, must force us to the conclusion that there is no destructive action of toxin by antitoxin, either in the test tube or in the body; but both substances act only through the intermediation of the cells of the body or, in other words, the action of the antitoxin is only an immunizing not a destructive one. There is in the strict sense of the word, no "antitoxin," but instead an immunizing substance.

Again the question, What is immunity? Before attempting any speculations on this question, it is necessary to call your attention to some facts regarding the nature of toxins. These, all are agreed, are albuminous bodies, toxalbumins as they are called—related to the poison of stinging insects, the venom of serpents.

Roux and Yersin in Pasteur's laboratory were the first to demonstrate the nature of these substances. They regarded the poison as a sort of enzyme or soluble ferment. This view has been adopted by Brieger and Fraenkel. This was the only way in which they could account for the intensity of the poison. By a ferment action, splitting up the albumins in our culture fluids, or in the body, they could account for the poisonous effects of the bodies. But in the laboratory of Straus, in Paris, it was shown that there was no diminution in the diphtheria poison when the germs were grown in albumin free urine. Buchner, in Munich, grew his tetanus germ in a solution of asparagin and mineral salts. Here, there could be but one source of the proteid poison, the cell contents of the bacteria themselves. Buchner concludes that the tetanus toxalbumins spring directly from the plasma of the tetanus cell.

Most writers on this subject assume that bacterial poisons are secretions or excretions of the germs producing them. But the ordinary method in use for obtaining the toxin of diphtheria disproves this. In our flasks of bouillon inoculated with the germ of diphtheria and kept at body temperature, there is every reason to believe that all growth and reproduction of the bacteria come to an end after two or three days, and yet before this fluid has attained its greatest toxicity it must be kept for some three months. Now what happens in that time? If we examine portions of the culture from time to time with

the microscope, we notice that the germs gradually lose their staining reaction and are slowly macerated and finally dissolved in the bouillon. The filtered fluid which at the end of three days had very little toxicity is now intensely poisonous. Here again we are led to believe that the source of the poison is in the bacterial cell. But I can not agree with Buchner that it comes from the cell plasma. In the last three weeks I have attempted to extract the poison from fresh cultures of the germs. By using the ordinary methods for extracting nuclein I have obtained an exceedingly poisonous substance, giving when injected, apparently the same symptoms as the toxin obtained from old cultures. If the bacterial poisons are nucleins it will help us to explain the phenomena of immunity and cure. That they are nucleins seems to me altogether probable even on theoretical grounds. The poison of the tetanus cell differs markedly from that of the diphtherial; the one produces tetanic convulsions; the other complete paralyses. Now we have many reasons to suppose that the protoplasm of all cells is much alike—that which gives the cell its morphologic or physiologic individuality comes from the nucleus.

I am aware that there are facts opposed to this view and I only offer it as an hypothesis. Brieger and Fraenkel have shown by analysis that tetanus toxin contains neither phosphorous nor sulphur. Malm has shown that a purified tuberculin contains no sulphur. How can they be proteids, much less nucleins? But the albuminous substance of the bacterial cell, according to Neucki, "is not precipitated by alcohol, and differs in its chemic composition from other known substances of this class." He calls it *mykoprotein*, and says that it contains no sulphur and no phosphorus. If these observers are right we must enlarge or modify our views as to the nature of proteids.

With all the preceding facts before us, what insight do we get in the problems of immunity and cure?

Pasteur's "exhaustion" theory asks us to believe that in case of natural immunity there was lacking in the organism a something necessary to the life of the microbe; that in acquired immunity, the attack of the disease—the growth of the germs within the body had exhausted this necessary food and until it was replaced the animal was immune. This theory is no longer sustained by Pasteur, or his pupils, and is evidently untenable.

The "retention" theory as proposed by Chauveau, is subject to similar objections. To suppose that an individual who has had scarlet fever, diphtheria, measles, smallpox, etc., retains in his body certain products which are capable for years, or even a lifetime, of protecting the body against these diseases is to ask a great deal of our credulity. Note that the theory requires a separate substance for each of the diseases. The child who has had, and is now immune to diphtheria is still susceptible to measles, etc. Moreover, we must under the theory suppose that the diphtheria poison for example, which now affects the organism so powerfully, is after recovery retained in the body without any deleterious influence. That the body could retain so many different poisons, for such lengths of time, and that these poisons could be tolerated with no ill effects seems to me to be bad physiology and poor theory.

Sternberg has elaborated a theory of immunity based on the idea of tolerance to poisons. Without giving the arguments advanced for and against this theory, I may say that, as it seems to me, there is abundant experimental evidence to show that these poisons are not merely tolerated; they are destroyed or at least disposed of.

Metschnikoff on his "phagocytic" theory would explain immunity in this way: Immunity and cure are essentially the same thing, or as he expresses it "most often immunity is but recovery in operation from the very onset of a disease." Disease germs which are not very malignant to the body exert a positive chemiotaxis or attractive power for the phagocytes; these in turn swallow the germs and destroy them. This ability to destroy the germs, and to be attracted by them, increases with use and is hereditary. Hence in the case cited, sooner or later the germs are overcome and on account of the educational process which the phagocytes have gone through, they retain for a longer or shorter time this power, or there is immunity.

Artificial or induced immunity, he explains, by supposing and in some cases demonstrating, that when there is negative chemiotaxis for the malignant germ, for the attenuated germ there may be a feeble positive attraction; this is increased by use until gradually the most virulent germs of this kind attract the phagocytes only to be destroyed. So when the tissues are gradually subjected to bacterial poisons, in this method of immunizing, the phagocytes are gradually educated.

I feel that I should apologize for such a brief and unsatisfactory presentation of the really beautiful and weighty theory of Metschnikoff.

I wish to call your attention to one more theory in regard to immunity. This is a theory advanced by my teacher, Vaughan, of Michigan. For the most part I shall use his own words:

"There are three methods of inducing immunity which reduce themselves to one and the same principle, *i.e.*, the introduction of germ nuclein into the body. This nuclein may be either inclosed in the cell wall or in solution. These methods are: 1, by the use of very small numbers of the virulent germs; 2, with living bacteria modified and reduced in virulence, attenuated culture; 3, dead bacteria morphologically intact or in solution. In all cases the cause that brings into existence the condition of immunity is a bacterial proteid. I call these proteids, and I wish it to be understood that I do so tentatively, and that I recognize the fact that the exact chemic nature of none of them is known; but for the present we may call them proteids. For reasons already given, I believe that the proteids which induce immunity belong to the class of nucleins."

How can we explain immunity with these facts before us? Briefly thus: the nucleins of the animal body have the power, or under certain conditions may be so trained or educated that they assimilate the bacterial nuclein. We have seen that toxin must be regarded as a specific product of the bacterial cell. Toxin and antitoxin from their very nature should be closely related, possibly only different modifications of the same substance. The fact that one is poisonous and the other not, that the one heals while the other kills, does not contradict this assumption. We have many examples of closely related substances which differ widely in their physiologic effects. From the comparatively harmless cholin the very poisonous neurin is produced by the simple abstraction of water.

"These different nucleins, that of the bacterial cell, and that of the blood, may be isomeric bodies, one of which may be designated as the α-compound, and the other as the β-compound, and one of these by simply causing a rearrangement in the atoms within the molecules of the other may assimilate the second. We do not mean to say that the process by which a nuclein assimilates another proteid is as simple as would be indicated by these examples, but they may suggest something of the nature of the chemistry of assimilation. We may assume that when an alpha-nuclein and a beta-nuclein are brought together, one will assimilate the other; and which one will absorb the other, will depend upon the relative strength or vitality possessed by them, and in measuring this strength several things must be taken into consideration. A vaccine has less of this power of assimilation than a germ of full virulence, and a nuclein in a sterilized culture less than either of the others.

"An organ that has once been stimulated by a given excitant responds more quickly the second time to the same excitant, provided that the interval of time is not too great. This explains the gradual loss of acquired immunity.

"Again, an organ that is stimulated by one excitant may not be responsive to another, and this accounts for the fact that an animal rendered immune to one disease remains susceptible to another.

"We can suppose that the process of immunizing an animal proceeds in something like the following manner: The modified virus of tetanus is introduced into some distant part, in some unknown way; the spleen is stimulated to action, and secretes a nuclein which is carried partly in solution, partly in the form of multinuclear cells to the invaded part of the body, and the tetanus poison is converted into the nuclein coming in contact with it, or is otherwise rendered inert. Later, a larger quantity of the tetanus poison is introduced, and now the spleen acts more promptly and energetically than before. This promptness and energy of action are increased by exercise and, finally, an amount of tetanus culture, of full virulence, sufficient to kill an animal whose spleen has not been subjected to this training may be introduced without ill effect. On this theory, the production of immunity consists in a special education of certain cells."

Now what have we learned from this review of these theories and experiments? We have seen that the body has the power to kill bacteria; that this power resides chiefly if not wholly in its soluble nucleins. On this fact is based nuclein therapy. We endeavor to aid the body when it is engaged in a losing fight, by giving it a nuclein closely related to its own, which it can readily assimilate and in turn use as a defensive agent.

We have seen that the body has a poison destroying or antitoxic power; that we can increase this to an enormous extent in certain animals, and that we can borrow this power from one animal and lend it to another. On these facts serum therapy is based.

We have seen that there are some reasons for believing that these germicidal and antitoxic powers are related; that in a strict sense there is no antitoxin but only an immunizing substance; that the problems of cure and immunity are probably identical. And I trust that we have seen that nucleins and antitoxins are not chance discoveries, but are the results of the investigations of many workers. A theory here, an experiment there—step by step—until at last the bacteriologist offers to humanity the results of his labors.

In conclusion: Men have for ages sought to find specific remedies for diseases. There are but few substances,—mineral, vegetable, animal or the products of the chemist, but have been tried. These attempts have been well summarized by Rossbach as follows: "For thousands of years mankind has experimented in this direction and the result has been the discovery of but four remedies for three diseases. It would be a terrible idea, that some other thousand years were necessary to detect another four remedies. The usual way of proceeding is too dangerous. Especially harmful proves the enthusiasm, not to say dishonesty of many observers. If by chance, a physician has found a remedy, after the application of which one or two cases of an infectious disease have quickly recovered, the success is at once attributed to the medicine. No thorough investigation on a larger scale is made, the new 'specific' has been discovered and is emphatically recommended."

We are learning better methods. Before attempting to find remedies we study the etiology of a disease. Having found the cause,—its noxious principles,—the way in which it harms, we then endeavor to discover the agents with which the body combats the "disease powers." Then, and not until then, are we in a position to intelligently seek for remedies. With this method, medicine seems to be entering on a new day.

The brilliant results that are being obtained in tetanus and diphtheria lead us to hope that many, it may be most of the contagious diseases may be subdued. With the same methods, experiments more or less successful have been made with septicemia, erysipelas, typhoid fever, tuberculosis, etc. But when we remember that two-thirds of mankind die of germ caused diseases we hesitate and fear to prophecy.

THE MEDICAL COLLEGE FRATERNITY, NU SIGMA NU.

BY BAYARD HOLMES, M.D. (ETA CHAPTER).
CHICAGO.

Perhaps this effort to bring a college fraternity to the notice of the medical profession will not be approved by many public-spirited physicians. The wars between the Greeks and the barbarians are still going on in all our American colleges and universities. Much can be said for and against the fraternities as they exist or have existed. Medical men are no exception to the mass of educated men in being prejudiced either for or against the Greeks. This article is written to inform, not to convert.

The introduction of fraternities into medical schools marks a distinct stage in the development of medical education. While the medical college was open only a few weeks each winter for bombastic lectures embellished with obscene stories on the part of teachers and for boisterous cramming on the part of students, all repeated once or twice on successive seasons, there was neither time nor incentive for fraternity life. The medical students of those halcyon days rarely knew many of their classmates in after life. As times and customs changed and the medical term was extended to eight or nine months for each of three or four successive years, the medical college became the home of a social unit. It was natural

that the precedent of the literary colleges in America should be followed by the students in these new medical centers and that Greek letter societies confined to medical schools should accordingly be established.

There are traditions of little fraternities in nearly all of the older colleges. None of these, however, attempted to become national in character until the establishment in a formal way of the Nu Sigma Nu at Ann Arbor. From a humble beginning at the University of Michigan in 1882, this order now numbers nine chapters and a membership of about one thousand. The membership in each chapter is limited to eighteen active student members. The existing chapters are:

A. Alpha, University of Michigan (1882).
B. Beta, Detroit College of Medicine (1889).
Δ. Delta, Western Pennsylvania Medical College (1891).
E. Epsilon, University of Minnesota (1891).
Z. Zeta, Northwestern University (1891).
H. Eta, College of Physicians and Surgeons, Chicago (1892).
Θ. Theta, University of Cincinnati (1892).
I. Iota, College of Physicians and Surgeons, New York (1893).
K. Kappa, Rush Medical College (1893).
Gamma Chapter has surrendered its charter.

The order stands for high scholarship and professional integrity. Its teachings are of the highest ethical character and the discipline of the order has been mild but effective. There has so far been no manifestation of snobbery, which is the rock upon which many fraternities break. Perhaps the spirit of the fraternity can be best exhibited by relating some experiences in the Eta Chapter. This chapter was organized three years ago. Over half the men were graduates of literary colleges and the active members have always been and are men of superior education and ability. Nearly all are total abstainers. At the banquets of this chapter no intoxicants have ever been used. A majority of the present active members live together in a flat which is called the Chapter House. It has been a great pleasure to me to drop in and see a little of the life there. The rooms are very pleasant and are furnished like a modern home. Music and pictures give the convivial spirit of community expression. An occasional visitor keeps alive the genial spirit of hospitality. For a few days, one of the fraters was sick and I found him well cared for by the other residents. The table is furnished by the occupants of the adjoining flat. It is not what one would call lavish, but it does very well and is dignified and satisfactory. The Chapter House is not only the home of the students but it is also the home of the chapter and the place of all regular meetings and entertainments. The influence of this chapter in promoting fraternity life seems to be very great. An older man looks with great satisfaction at the growing friendships which he sees in the relatively young under his instruction and care.

In this chapter the most favorable reaction of the stronger and rougher upon the weaker and more refined has been observed; of the true and exacting upon the politic; of the genial and effusive upon the reserved and diffident. It is not difficult to predict for the men who thus live together,—all for one and one for all, in this little social community,—great pleasure in after life from these well cemented friendships. Each one has been a gainer. Each one has become a truer man, a better student, and will be a broader physician from the culture of this fraternity life. A few of the residents are working for honors and hospital positions. No records have yet been made.

In the college, the sentiment was for a time strongly against the fraternity and fraternity men. By a very carefully executed policy of non-interference and non-resistance and by a concerted effort at conciliation, nearly all the opposition has now subsided. A chapter of the medical order of *Π. P. Σ.*, has lately been introduced with a full membership among the very best men in the institution, and this, it is hoped, will allay the remaining prejudice against the older fraternity.

The last grand council of the order was held with Zeta Chapter during the World's Fair. Prof. Nicholas Senn gave the council a complimentary clinic at Rush Medical College and a banquet was held at the German Press Club. John L. Irwin, M.D., was elected Grand President, and W. J. Lyster, Harper Hospital, Detroit, Acting Secretary. A directory of the fraternity has lately been published. The names of many members of the faculties of the colleges in which chapters are located are to be found in this directory as honorary members. Some of the most distinguished physicians and surgeons in the country are thus enrolled. With careful discipline and a discrete propaganda, the Nu Sigma Nu will be a powerful factor in medical life and education during the next twenty years.

PERITONEAL SUPPORTS—(LIGAMENTUM PERITONEI.)

BY BYRON ROBINSON, M.D.
PROFESSOR OF GYNECOLOGY POST-GRADUATE SCHOOL. CHICAGO.

The peritoneal supports of the abdominal viscera have received different names and appellations. In the Latin language they all come under the term, ligamentum, but in the general English in vogue the supports are called: *a*, ligaments; *b*, mesenteries; and *c*, omenta. The term, ligament, is applied to a fold of peritoneum which supports the more solid portions of the digestive organs as the liver, pancreas and spleen, yet is not restricted to these organs but is applied to the peritoneal supports of the genito-urinary organs. The term, omentum, is generally applied to a fold of peritoneum which stretches from the stomach to some other organs. There are three omenta stretching from the stomach to the liver, colon and spleen. The term, mesentery, is applied strictly to the small intestinal support, but general usage extended it to the supports of the four parts of the large bowel. The synonyms for the term, mesentery, are, mesaraion, mesaræum, medianum, membrana pinquis intestinorum, Lactes, Mesenteron, meseræum, mesoræum medium intestinum and epichordis. Latin, *mesenterium;* French, *mesentere* and German, *Gekröse.* Some writers apply the word, mesentery, to the whole of the peritoneal supports. The utility of the peritoneal supports are:

1. To retain an organ in a definite position.
2. To hold the viscera in definite relations so that entanglement is prevented. To prevent volvulus strangulation, dislocation or misplaced pressure.

3. To limit the viscera in physiologic and anatomic relations.

4. To allow sufficient independent motion for the viscera to functionate. From the peritoneal supports allowing such freedom by slender neuro-vascular styles on the various viscera, arises the difficulty of acquiring accurate anatomic knowledge of visceral anatomy. The difficulty of acquiring correct views of visceral relations consist of three peculiarities of the viscera, viz., *a*, the abdominal organs allow a wide range of movement without becoming dislocated; *b*, the organs can alter their conditions without losing their integrity to return to normal; *c*, they are highly endowed with elasticity.

5. The supports serve to some extent to prevent hernia.

6. A special utility of supports is to transmit vessels and nerves to viscera.

7. The elongated visceral supports allow the organs to pass through their rhythm.

8. The supports allow the law of compensation, *e.g.*, when one viscus enlarges the elongated supports of others give them a chance to glide out of pressure, out of the way of harm.

9. The most common pathologic condition of peritoneal supports is elongation (frequent after 35 years of age).

10. Anomalies of peritoneal supports are not common. Their origin is nearly always due to peritonitis.

The following table of the chief peritoneal supports I have prepared for the purpose of noting the English and Latin appellations of the same, and also to show at a glance the variety and kind. The scope and number are more easily comprehended in a compact diagram:

FIG. 1—Represents the primitive mesentery and digestive tubes of mammals. S, stomach; M, mesentery; I, intestine; A, aorta. The straight digestive tube is suspended from its dorsum by a simple double bladed membrane.

Suspensory ligament of the liver. (Ligamentum suspensorium hepatis.)
Round ligament of the liver. (Ligamentum teres hepatis.)
Right lateral ligament of the liver. (Ligamentum triangulare hepatis dextra.)
Left lateral ligament of the liver. (Ligamentum triangulare hepatis sinistra.)
Coronary ligament of the liver. (Ligamentum coronarium hepatis.)
Gastro-splenic ligament. (Ligamentum gastro-lienale.)
Phreno-splenic ligament. (Ligamentum phrenico-lienale.)
Left costo-colic ligament. (Ligamentum phrenico colicum sinistra.)
Right costo-colic ligament. (Ligamentum hepato-colicum.)
Hepatico-colic ligament. (Ligamentum hepato-colicum.)
Ascending mesocolon. (Mesocolon ascendens.)
Descending mesocolon. (Mesocolon descendens.)
Transverse mesocolon. (Mesocolon transversum.)
Lesser omentum. (Ligamentum gastro-hepaticum.)
Greater omentum. (Ligamentum gastro-colicum.)
Gastro-splenic omentum. (Ligamentum gastro-lienale.)
Phrenico-esophageal ligament. (Ligamentum phrenico-esophageal.)
Mesentery. (Mesenterium.)
Broad ligament of the uterus. (Ligamentum latum uteri.)
Round ligament of the uterus. Ligamentum teres uteri.)
Utero-sacral ligament. (Ligamentum sacro-uteri.)
Utero-vesical ligament. (Ligamentum vesico-uteri.)
Gastro-pancreatic ligament. (Ligamentum gastro-pancreaticum.)
Infundubulo-pelvic ligament. (Ligamentum infundubulo-pelvicum.)
Posterior ligament of the bladder. (Ligamentum recto-vesicale.)
Lateral ligaments of the bladder. Ligamentum vesico-laterale.)
Suspensory ligaments of the bladder. (Ligamentum suspensorium vesicale.)

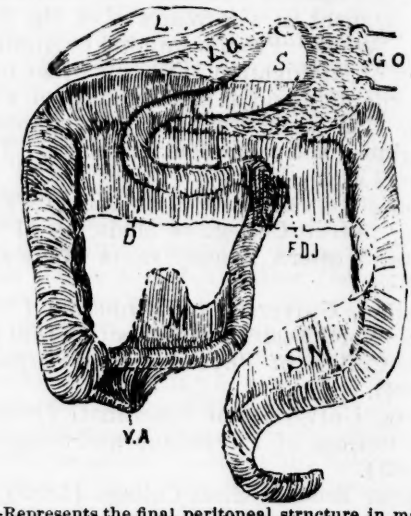


FIG. 2—Represents the final peritoneal structure in man. L, liver; L, O, lesser omentum; G, O, great omentum, drawn aside by two hooks; D, the outline of the duodenum; F, D, J, fossa duodeno-jejunalis; M, mesentery; S, M, meso-sigmoid; Y, A, appendix with its mesenteriolum.

THE MESENTERY.

In various valuable works it will be observed that the word mesentery, is used to embrace all that is finally covered by the word, peritoneum. I wish at this place to discuss the origin of the mesenteries—the neuro-vascular pedicles of the viscera.

The works of Toldt and Gegenbaur may be mentioned as samples of such titles as the mesentery. The digestive tract is so intimately associated with the peritoneum that they are both studied together, as may be noted in Treves' little pamphlet, "Intestinal Tract and Peritoneum in Man." In the present work I shall consider the development of the digestive tract and peritoneum together, and that the development of the one can not be comprehended without the other. There can be no serous cavity without viscera. The viscera produce the cavity by their presence and advancing growth. The moving viscera and independent moving of adjacent walls are accountable for the serous lymphatic sac. In fact, the very relation of sac to organs also shows one depends on the other, for the peritoneum envelops the organs, without inclosing them, like a tightly fitting night-cap. A good illustration of the peritoneum is a frieze on a house, where the figures are represented in relief, but all the elevations and depressions are covered. The figures are thrust forward on the frieze, invaginating or carrying the surface with them. The idea of the inseparability of the abdominal viscera and the peritoneum can not be more forcibly impressed on the reader than to say that arrest of visceral development is nearly always due to peritonitis, *e.g.*, the non-descent of the cecum, which I have seen six times, was in each case due to old or recent peritonitis.

A mesentery in general consists of a double fold of peritoneum, which partially invests a viscus. No viscus is entirely covered by peritoneum. The point on the organ where the membrane diverges to envelop it, leaves a space uncovered by peritoneum. A mes-

entery is generally considered as such when its blades after diverging again come in contact before reaching the line of parietal insertion. As illustration of this idea the right or left colon may be taken. If the peritoneum covering the anterior and lateral surfaces of the colon does not come in contact between the posterior surface of the colon and dorsal wall we say there is no meso-colon. With no meso-colon the posterior surface of the bowel is in contact with the connective tissue of the dorsal abdominal wall. Should there be a mesentery of the colon, the layers of peritoneum which invest the lateral and anterior bowel surface approach to contiguity between the bowel and dorsal wall. In human anatomy the word, mesentery, is by general consent limited to the small and large bowel.

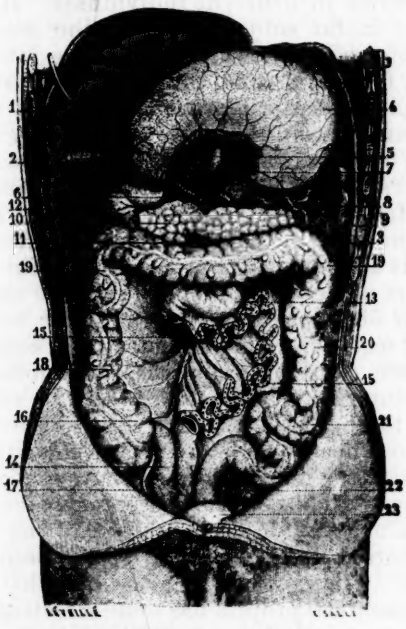


FIG. 4—Represents the mesentery with the chief part of the small intestine cut away (after Sappey).

As the digestive canal is developed, the peritoneum is also developed. The double layers of peritoneal membrane anchor the canal to the posterior abdominal wall and this anchorage is the mesentery. That part of the mesentery which passes to the stomach is called the mesogaster, anterior or posterior. At this point we have both a posterior and an anterior mesentery. Beginning at the middle line of the dorsal wall two layers of peritoneum (mesogastrium posticum) pass to the posterior border of the stomach. These two layers of peritoneum diverge, pass forward on each side of the stomach and again come in contact on the anterior border or lesser curvature, after which they (mesogastrium anticum) pass to the anterior abdominal wall. That portion of the double fold of peritoneum which extends from the liver to the abdominal wall and down to the umbilicus and is known as the suspensory ligament (ligamentum suspensorium) of the liver is a part of the anterior mesogater. The mesogastrium anticum or lesser omentum has deviated from the middle line to the right, away from the remnant of umbilical vein, by the irregular and rapid growth of the liver. The remainder of the digestive canal has no anterior mesentery, having lost it by absorption or atrophy. In human anatomy the mesogastrium posticum and anticum bear the names of greater and lesser omentum. They are then mesenteries with other acquired names. As long as the digestive canal maintains its original straight course the relations of its mesentery are simple. The peculiarities of its mesentery are all acquired, and in fact the only primitive mesentery left in the adult is the mesentery of the sigmoid. The liver grows rapidly and irregularly, displacing organs and appropriating large areas of peritoneum. The stomach rotates and twists, assuming new forms and positions. The great intestinal loop rotates and

A

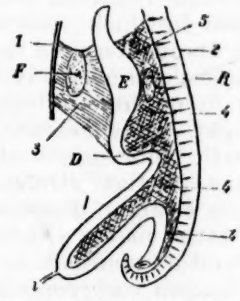


FIG. 5—"A" represents an early mesogastrium anterior and posterior before torsion. 1, anterior abdominal wall; F, liver; E, stomach; 3, lesser omentum; D, duodenum; l, remnant of vitelline duct (Meckel's diverticulum); 5, mesogaster posterior; 2, vertebral column; 4, 4, primitive mesentery; L, great intestinal loop; R, spleen, (after Debierre).

changes the original mesenterial attachments. The kidneys rapidly enlarge and steal away the mesenteries of the colon ascendens et descendens. Still further changes of the mesentery arise from the fact that the small bowel grows more rapidly in length than its mesentery and hence the intestine is thrown into frill-like folds. These changes in the simple primitive mesentery are manifest in fishes; as the scale of animal life ascends, the most complicated acquired arrangements are found in man. In watching the development of the mesenteries from a simple straight fold, embracing a simple straight tube, through evolutionary stages to complications which are almost incapable of being unravelled, the mechanical idea of peritoneal development must be thrown aside. The whole matter must be considered under

B C

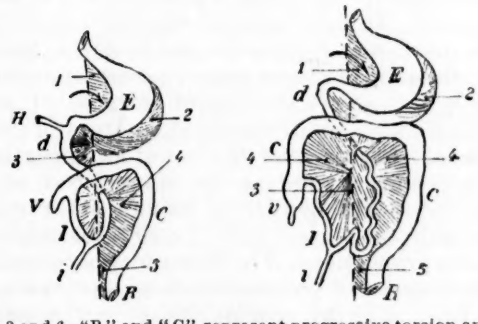


FIG. 3 and 6—"B" and "C" represent progressive torsion and formation of mesenteric supports. 1, anterior mesogaster; 2, posterior mesogaster; E, stomach; C, colon; l, vitelline duct; I, small intestine; V, cecum; 4, mesocolon; 5, mesorectum; R, rectum; 3, in "B" mesoduodenum, and 3, in "A" mesentery, (after Debierre).

readjustments of parts and relations. Some organs appropriate peritoneum by rapid growth, while others yield a portion from shrinking. Hypertrophy, atrophy and changes of position of viscera account for peculiarities of peritoneal arrangement in adults. Remnants of embryonic life, the peritoneal recesses formed by blood vessels contained in folds of the membrane account for changes in the mesenteries.

In a completely formed mesentery we have three distinctly formed layers to observe. The two superficial layers consist of an epithelial membrane of a whitish pink color, glistening, moist and smooth to the touch and covering the organs out of sight with an unbroken surface. The third, middle or essential part of the mesentery is the connective tissue lying between the superficial epithelial layers. This is the membrana mesenterii propria. It includes in its meshes veins, arteries, lymph vessels and nerves and occasionally some muscular fibers. This is the essential structure which serves as scaffolding to support in the definite relations vessels and nerves. It is a fibrous bed in which vessels and nerves securely lie. The fibrous tissue in the mesentery surrounding the vessels and nerves is dense, strong and often sufficient in quality to bury the vessels or nerves out of sight. This mesentery can be seen as early as the fourth embryonic week, in the human, with a strong lens. It then stretches from the mid-dorsal line to the straight digestive tube. At this time no sign of fat is visible with the strongest lens.

I have made careful examinations of the mesentery at six weeks of human embryonic life, when the digestive tube had just begun to distinctly show the bend for the great intestinal loop and the dragging of the duodenum to the right with its mesentery. At this age (six weeks) with a strong lens and the mesentery in a good light, it is plain to see white strands of connective tissue forming the membrana mesenterii propria. At certain points the mesentery is more transparent than at others. It is made non-transparent or opalescent by the accumulations of bundles of fibrous tissue. The bundles of tissue do not seem to have any distinct order, but seem to follow in general parallel with nerves and vessels. The change of this middle mesenteric connective tissue layer is not very manifest as fetal life advances. The bundles of nerves and vessels are securely united and fixed by the membrana propria in extensive qualities. As the nerves and vessels approach the gut they become more scattered and less parallel. The fibrous tissue also becomes more scattered and diffuse. The whole mesentery becomes thin among the arches of the mesenteric arteries. In the two months' human embryo, and in the horse, I have noticed it astonishingly thin. In most cases it may be noted that just as the mesentery divides to embrace the bowel, the middle mesenteric layer again increases in connective tissue. This serves the useful purpose of properly distributing the small vessels and nerves on the digestive tube. It also gives the bowel an opportunity to contract and expand in an elastic bed of tissue. About the fourth month of human embryonic life, the membrana mesenterii propria assumes more manifest proportions. The mesentery becomes thicker and stronger. It assumes more of the character of adult life. But the special change in the mesentery which occurs so manifestly at the fourth fetal month is the rapid increase of, not only the size of the blood vessels and nerves, but the sudden increase of the connective tissue fibers lying around them. The great trunks of blood vessels lie solidly and firmly embedded in the quickly increasing bundles of fibrous tissue, while the lateral small branches pass off in less compact surroundings. This connective tissue lying between the mesentery is governed very much by the blood vessels and probably nerves, for when the blood vessels become manifestly large at the fourth fetal month the tissue accumulates step by step with them. This tissue is the guardian of the vessels and nerves to sustain and protect relations. In later fetal life the arrangement of fibrous bundles of sub-peritoneal tissue must be wrought in the line of blood vessels. A small amount of dissection will soon demonstrate that these fibrous bundles between the mesentery run parallel to blood vessels in general, and entwine and weave themselves around the channels which carry nourishment. Between the trunks of vessels one can observe the membrana mesenterii propria more as a membrane, dense and strong, which holds the parts in definite relations. In very spare infants of six months old or in very spare cadavers of adults, I have often dissected it and was surprised at the strength of the membrane. Yet it varies in different individuals. It is not so apparent in fat subjects, but in the sense of distinctly observing its wide meshes the fat subject is the best, for all fat is contained in the meshes of the membrana mesenterii propria. Perhaps this membrana can be seen the most typically in the horse, with his enormous-sized mesentery. It looks almost like fibers of white tendon in this animal. In a spare infant cadaver, of six months, the membrane is very thin, but in that case shows its fibrous character. It may be observed that by careful dissection on a spare adolescent cadaver it will be easy to note muscular fibers passing from the celiac axis and its adjacent region into the mesentery. In some subjects this muscle (musculus suppensorius duodeni or, better, mesenterii) is abundant, while in others it is difficult to find it at all, especially if the cadaver be old and long dead, or injected with decolorizing agents. Again, with the increase in size of the blood vessels, the fibrous bundles in the mesentery accumulate so rapidly along the blood channels that the deficiency of the fibers in the intervening spaces becomes more apparent. The view would hence arise that the membrana mesenterii propria has some directing influence over the vascular channels. Even the existence of the mesentery itself depends on the ordering of the blood channels. For, in certain areas in the mesentery, chiefly at the lower ilium, we may find in man and lower animals spaces almost devoid of blood vessels. These areas are so thin that a slight trauma would perforate the mesentery.

(To be continued.)

NEPHRORRHAPHY FOR MOVABLE KIDNEY (LEFT).

Read before the Chicago Pathological Society, Jan. 14, 1895.

BY E. F. GAVIN, M.D.

CHICAGO.

J. P., 50 years old, sailor by occupation, married. Family history negative. Previous condition of health: He had typhoid fever when 4 or 5 years old. During the late war, while serving in the Navy, he was confined to his bed with rheumatism for nine months and at another time for four months. No history of tuberculosis in the family. He denies any syphilitic taint. He had malaria at about 20 years of age.

Condition before operation: His present illness began about five years ago. Since then he has been annoyed by chronic inflammation of the bladder. He found it necessary to void his urine four or five times during the night and the act of micturition

was accompanied by sensations of scalding or burning. His bowels have been constipated all the time, and he has slight gastric disturbance. About four years ago, slight spinal curvature began, being principally marked in the dorsal and lumbar regions. He finds it necessary to use a cane to support himself on account of his deformity. He has lost considerable flesh and complains of much pain of a neuralgic type, which radiates from the left lumbar region to left thigh and leg. About two years ago he noticed a "lump" in his abdomen which he could move around in various directions, and which he found gave him no trouble when it was pushed up under the left ribs as he expressed it. He stated that when he squeezed it a sickening pain was felt. After awhile he found that a canvas belt with a large pad on the inside of it kept the "lump" up in the left lumbar region. He said that occasionally this lump would slide down under the belt and being squeezed would cause him a great deal of distress. For a long while he has been unable to control his bladder and has found it necessary to wear a rubber urinal.

Bi-manual examination revealed a movable kidney, the outline of which could be easily made out as his abdominal walls were very flaccid.

An examination of his urine revealed pus and triple phosphates. A search was not made for tubercle bacilli. His spine was strongly curved to the right. Possibly there was some ankylosis of the lower dorsal vertebræ. The patient had no recollection of acute symptoms of spinal disease. His skin was dry and had a dusky hue.

Treatment previous to operation: I recommended him to drink freely of flaxseed tea and prescribed salol and boric acid āā 5 grs., to be taken in a glassful of water (boiled) or in flaxseed tea every four hours during the daytime. I taught him how to pass a soft rubber catheter No. 9, and directed him to use it four times daily and told him to empty the bladder before retiring for the night.

A special apparatus was secured for him, with a suitable pad attached on the left side to keep the kidney in place. This failed to give him relief, *e.g.*, to support him as he desired, and so it was discontinued. He found that his old belt worked better. His bladder improved steadily and his annoyance at night almost disappeared.

He urged me to operate and either remove the kidney or fasten it in its normal position, and so I made the necessary arrangements. The indications were:

1. To relieve annoying pain, resulting from the kidney being squeezed.
2. To relieve bladder symptoms by straightening the ureter and relieving symptoms resulting from irritating urine in it and in pelvis of kidney.
3. Possibly to relieve weight from bladder and pressure upon bowels.
4. To possibly favor treatment of the spine.

Operation March 3, 1893: Chloroform anesthesia. The usual colotomy incision was made, the kidney pushed into its normal position, the capsule opened about one inch and the edges of the incised capsule sutured with silk sutures to the edges of the wound on either side, drawing the edges of the cut capsule as far outward as possible.

Three long silkworm gut sutures were passed through the kidney substance and through the muscles and fascia some distance from the edges of the wound on either side and tied after inserting a twisted silkworm gut drain in the lower angle of the wound. The balance of the wound was closed with silkworm gut interrupted sutures, taking care to approximate the edges of the skin incision as neatly as possible. Beta-naphthol was sprinkled over the line of incision and bichlorid gauze and cotton applied. The patient made an excellent recovery.

Subsequent treatment: After the wound closed I decided to try and improve the condition of his spine. I advised Sayre's suspensory apparatus which he has used faithfully with good results. He is now more erect, the spinal curvature less marked and he feels better.

Once a week for about two months I washed his bladder out with silver nitrate sol. 2.5 per cent. This improved the condition of this organ very much, as he hardly ever expressed the desire to void his urine during the night after this treatment was begun.

He used the interrupted and continuous currents for some time and felt better, but electricity did not seem to assist the bladder as much as the silver nitrate sol. He now has some control over the bladder and can retain a moderate amount of urine. At night there is not the old inclination to void the urine, and taking everything into consideration, I feel that the operation has helped his condition a great deal.

DISCUSSION.

Dr. D. W. Graham—I would not consider in this case that the spine was in any degree the cause of the movable kidney. The Doctor is silent as to the pathologic condition of the spinal column; whether this was what we call scoliosis or whether it was disease of the vertebræ. But I do not see how the curve could be a cause of the condition of the kidney, although possibly it had something to do with it. In regard to the indications for operation, I think they were very clear in this case. It is in just this class of cases where anchoring the kidney to the muscles of the loin is followed by relief of symptoms and is of benefit to the patient. In the large majority of cases the right kidney is the movable one. I have had two cases of movable kidney on the left side; one this afternoon, and it seems to me in these two cases and the one reported tonight that the symptoms are more pronounced than when the right kidney is involved. I have seen a good many cases of movable kidney on the right side, but only one in which the symptoms were as pronounced and affected the health of the patient as much as in these cases of movable left kidney. We know that there are a great many cases of movable kidney, in which there is no necessity or indication for operation as far as symptoms are concerned. I have in mind a number of such cases. So it is not simply the presence of a movable kidney that calls for operation; it is the group of symptoms and their severity. The Doctor speaks of the kidney pressing on the bladder; that may be correct; it is possible. In one case where I operated the kidney was found hanging over in the pelvis, lying between the common iliac vessels. However, I did not determine that to be the kidney until I had opened the abdomen through the middle line. I then sewed up the wound and through an incision in the loin anchored the kidney in place. We know that the symptoms of cystitis and the symptoms the Doctor has described, as due to pressure of the kidney, may occur in any of these severe cases without having the kidney press upon the bladder. I am inclined to think the Doctor has drawn a wrong inference there.

As to the method of operating, there are three chief ones: one is simply stitching the fatty capsule to the muscles of the loin, but that method is being and should be abandoned. The other two methods differ a little in detail; one simply brings the kidney up against the wound and sutures it with two to four sutures through its substance to the borders of the incision. The other method consists in incising the fibrous capsule for a distance of an inch or an inch and a half and suturing the incised border of the capsule to the tissues. I prefer, having opened the capsule, to suture the edge of the fibrous capsule to the border of the muscle with absorbable sutures and then sew up the wound. I have seen a good many use silk and silkworm gut sutures to stitch the kidney to the lumbar wall. I do not understand why this is still

persisted in, because in the large majority of cases this material causes trouble; it leaves sinuses, and the stitches have to be removed at some future time. I am satisfied that it is not a question of the aseptic condition of the suture, because if one careful person can render silk or silkworm gut aseptic, another careful person can usually do it. With the help I have, I believe I can render silk or silkworm gut as aseptic as anybody can, and yet in the majority of cases where I bury silk in the tissues it gives rise to a sinus from which these sutures have to be removed. I am satisfied that the greater number of buried sutures of silk or silkworm gut require removal later. I am not speaking of the peritoneum, but of other tissues.

DR. GAVIN—In regard to the spine producing the movable kidney, Dr. Graham misunderstood me. I considered the curvature of the spine as tubercular in nature, and having caused the consumption of nearly all the fat of the body a lack of support to the kidney resulted. When I exposed the kidney there was very little fat about it, and I thought it extremely probable that the general wasting process favored the movable state of the kidney. I did not use catgut because I had no preparation that I could rely upon as being perfectly aseptic. I used buried silk sutures to connect the muscles together. I did not intend to state that I brought the skin directly in contact with the capsule, but the object was to bring the edges of the cut capsule as near the surface as possible and allow it to adhere to the muscular structure. The skin incision proper was closed with silkworm gut sutures, which were removed at an early date.

DR. SANGER BROWN—It appears to me that this is a very interesting case, but it is rather puzzling to get any satisfactory explanation of the relation between the spinal curvature and the kidney. I did not quite understand from the Doctor's paper that it was demonstrated the patient had tuberculosis, and it occurred to me in trying to think of cause of the curvature, that possibly the movable condition of the kidney and the irritation set up by that might excite atrophy or wasting of the muscle and in some way unfavorably affect the nutrition of the intravertebral substance, and in that way the spinal curvature be accounted for.

DR. A. E. HALSTEAD—I believe the ordinary explanation of cystitis in such cases is that the hydronephrosis which is usually present in movable kidney is always infective. I think that would explain all the bladder symptoms in this case. When the Doctor changed the position of the kidney and straightened out the ureter, the bladder symptoms disappeared, because the hydronephrosis was drained. I do not see any relation between spinal curvature and floating kidney.

DR. GRAHAM—I did not understand whether the Doctor's patient has tuberculosis of the vertebræ or any other disease of the bones.

DR. GAVIN, in closing the discussion, said: The patient had no active disease at the time I saw him; there was no evidence of a collection of pus. I thought possibly there might be a tubercular process in the bodies of the vertebræ.

A CASE OF PAPULAR SYPHILIDE OF THE CONJUNCTIVA.

Read before the Chicago Pathological Society, Jan. 14, 1895.

BY W. FRANKLIN COLEMAN, M.D.

PROFESSOR OF OPHTHALMOLOGY, POST-GRADUATE MEDICAL SCHOOL OF CHICAGO.

As several of my confrères have never seen a secondary syphilitic lesion of the conjunctiva, and since, until recently, no case has come under my own observation, the disease seems sufficiently rare to demand that every instance of it be put on record.

Before reporting our own case, we will take a glance at the literature of the subject, to illustrate the infrequency and the nature of syphilitic disease of the conjunctiva (especially secondary lesions) and will refer chiefly to Bull's excellent resumé in 1878, and to writings indicated under the head of "Diseases of the Conjunctiva" in the "Index Medicus" from its first issue (1879) to date.

The following is taken from a paper by Charles Stedman Bull, M.D., in *American Journal Medical Sciences*, October, 1878:

"Syphilitic lesions of the conjunctiva, existing independently, and not connected with lesions of the eyelid on the one hand, or the eyeball on the other, are not common. The syphilitic lesions of the conjunctiva are eruptions, ulcerations and infiltrations. Under the head of ulceration are the chancre and secondary ulcers resulting from the breaking down of infiltrated masses. According to Sturgis in his report of 1,646 tabulated cases of chancre, the ulcer occurred only six times on the eyelid. In some of the cases, the ulcer was purely a conjunctival lesion. Demarres had in his practice two cases of chancre of the conjunctiva, one palpebral, another in the inferior cul-de-sac.

Galezowski reports six patients with chancre of the conjunctiva, and Sturgis, Bumstead, Dietlen, and Bull one each.

An instance of syphilitic conjunctival disease is quoted from Smee, who calls it "conjunctival blotch," and three similar cases are given from Mr. French.

Lawrence cites two cases of general papular eruption in which there were a few pustules on the mucous membrane of the lids.

Bull says he has seen several cases of ulcerated mucous patches of the conjunctiva, and reports one. He remarks that secondary lesions of the conjunctiva, those occurring during the period of constitutional infection, are much more frequent than the initial lesion.

The papular syphilide at least, *if more frequent* than the chancre, is much *less often reported*. Bull does not quote a single case in his very full paper, and the "Index Medicus" gives only one by title.

A third variety of conjunctival lesion in constitutional syphilis is the gummy infiltration, and this is probably the least common of all.

Descriptions are given of conjunctivitis gummosa in the practice of Tavignot, Magnin, Hirschberg, De Wecker, Estlander, Brière and Bull.

Galezowski affirms that syphilitic affections of the conjunctiva are either chancres or mucous patches. If he intends to assert that the latter are identically the same as papules, the authority of Keyes will support it.

Laucereaux describes secondary lesions of the conjunctiva as small circumscribed spots, elevated, of a reddish gray or coppery color, not differing much from certain eruptions on the skin with which they may co-exist.

"The 'Index Medicus' refers to some thirty papers on the primary (ulcer) and tertiary (gumma) lesions of the conjunctiva, but to only one by title on the secondary (papular) lesions, viz., Les papules syphilitiques de la conjunctive."—*Gaz. Med. de Paris*, 1894, 9, s. I., 196–198.

Bull, writing on "System of Genito-Urinary Diseases, Syphilology and Dermatology," by Morrow, 1893, divides the syphilitic diseases of the conjunctiva thus: conjunctivitis; secondary lesions; mucous patches; ulcers; gummata.

Loring, in a chapter contributed to Bumstead on "Venereal Diseases," 4th Ed., says: "The ocular conjunctiva is very rarely the seat of syphilitic manifestations." He quotes from Savoy, (Paris, 1876), a case of syphilitic papule developed upon the ocular conjunctiva 3 m.m. above the cornea. The patient contracted syphilis six months previously, and had a lenticular eruption on the whole body. Two similar cases are given from Horteloup and Laibler.

Secondary syphilis gives rise to secondary skin affections of the conjunctiva, which attend it on other parts of the body. (Swanzy, "Diseases of the Eye," 1892).

In cases where the face is the seat of papular or tubercular eruptions, a corresponding condition may at times, though rarely, be observed upon the lining membrane of the lids (De Wecker). The papular syphilide appears from the third to the sixth month. Unless they ulcerate, the papules leave no scars. They frequently leave pigmented areas behind (Keyes).

The following notes of my case are incomplete, as the patient unexpectedly discontinued his attendance:

N. T., age 24, male, colored, came to my clinic at the Charity Hospital in November, 1894, on account of an inflammation of the left eye, which had somewhat annoyed him for a week, with a feeling as if something had got into his eye. At the limbus of the cornea were four nodules implanted in the conjunctiva; one on the nasal side, one on the temporal, and two below and within 3 m.m. of each other. The lateral nodules were 4 m.m. in diameter by 2 m.m. in height. The lower 3 m.m. in diameter by 2 m.m. in height. All circular, with a finely granular apex, and of the red color of granulation tissue. The papillary reaction, the iris and the cornea were normal. V =20-50. The refraction was not tested. In the vicinity of the nodules there was moderate hyperemia of the conjunctiva. Very little pain had been complained of. Two very small ulcers (1 m.m. in diameter) were situated on the outer third of the anterior edge of the upper lid. The pre-auricular glands were not enlarged. A history was given of the appearance on the face, at the age of 13, of an eruption which disappeared and left no pitting and relapsed once in about three years. During July last he contracted a chancre, which was followed by swelling of the inguinal glands, and a secondary papular eruption on the skin. The cheeks and forehead presented a thickly covered, mixed acne-like and papular eruption, arranged here and there in somewhat irregularly concentric groups. Numerous depressed hyper-pigmented scars were scattered among the papules. The covered parts of the body were not examined.

During the second week of treatment the papules of conjunctiva diminished one-half in size, and around the two lower edges of the conjunctiva a pigmented zone was first seen.

The diagnosis of a secondary papular syphilide of the conjunctiva was based upon the syphilitic history of the case, the associated papular syphilide of the face, the exclusion of other lesions of the conjunctiva, and the rapid resolution of the nodules without ulceration under the mixed treatment and the application to the eye of an ointment of hydrarg. ox. rub. grs. ii, vaselin 3j rubbed in for five minutes daily, by massage of the lids.

The patient was referred to Dr. Baum, Professor of Dermatology, Post-Graduate Medical School, who confirmed the diagnosis and prescribed the constitutional treatment. The rapid progress toward recovery (in two weeks) probably accounts for the early vanishing of the possessor of our rare specimen.

DISCUSSION.

Dr. C. D. Wescott—As Dr. Coleman has said, these cases are very rare; it has never been my fortune to see one such as the Doctor has described. The only syphilitic lesions of the conjunctiva I have seen are the simple chancre, of which I have seen one case, and one case of gumma. It does not seem possible that there can be an error of diagnosis in this case. I do not know of anything that affects the conjunctiva which would give a similar appearance, even without the confirmative syphilitic history and other lesions. I congratulate the Doctor on having had an opportunity to observe such a case.

Dr. F. W. Coleman—I would say with regard to chancre that they are not so very infrequent upon the edge of the lid, and chancres upon the lids might be easily mistaken for epitheliomata. I have had the misfortune to remove from the lid what I thought was an epithelioma and had a chancre turn up very near it within ten days, which was cured with iodid of potassium. This case, by the way, was diagnosed by the syphilologists as an epithelioma. Gumma is not so rare although it seldom manifests itself in the conjunctiva, but not so rarely in the iris and ciliary body involving the sclera and therefore appearing externally as a nodule. That the Doctor does not refer to. The gumma that limits itself and is situated primarily in the conjunctiva is an excessively rare disease. Up to 1878 Bull makes a resumé of all the cases he has had access to and describes them fully, but does not describe a single case of papule. The "Indicus Medicus" from 1879 to date only records a single case by title of papule of the conjunctiva.

Dr. C. W. Hawley—Speaking of gumma of the conjunctiva reminds me of a case I saw in a hospital in Europe, which was diagnosed gumma of the conjunctiva and was treated with mercurials very faithfully for a long time, but it did not seem to improve and finally the surgeon concluded to operate upon it. When he made his incision through what he at first supposed was a gumma he removed three pieces of putty. It was impossible to get any history of how the putty came there, the patient said she did not know; either she did not want to tell or did not know how it got there.

A CASE OF TACHYCARDIA COMPLICATING CHLOROFORM ANESTHESIA.

Read before the Louisville Academy of Medicine, March 18, 1895.

BY HENRY E. TULEY, A.B., M.D.

CLINICAL ASSISTANT TO CHAIR OF PRACTICE KENTUCKY SCHOOL OF MEDICINE; VISITING PHYSICIAN TO THE MASONIC WIDOWS AND ORPHANS' HOME, ETC.

LOUISVILLE, KY.

The following is the report of a case of tachycardia, complicating chloroform anesthesia. The man was a patient of Dr. Mathews, and was to be operated upon for fistula. He was about 30 years of age; a strong, vigorous man, and a good subject for chloroform anesthesia. The following previous history was detailed after his regaining consciousness. He had had repeatedly, attacks of heart trouble, a greatly accelerated heart's action being the chief symptom, with once or twice loss of consciousness during the attack. He is a slave to smoking, using the strongest tobacco, uses liquor sometimes to excess and drinks strong coffee. Face was florid, but heart's action normal, pulse 84, with no organic lesion. He was very nervous when he got on the table, and asked that his heart be examined but said nothing of his previous history. The anesthesia was begun at 3:06 P.M., with chloroform, on the Esmarch inhaler, drop by drop method. The exciting stage was quite severe, the chloroform was pushed and in three minutes he was relaxed, it having taken 2 5/10 drachms to bring him to the surgical degree, taking fourteen minutes; in all 5 drachms were used.

The operation was begun at 3:20 P.M; the pulse and respiration were normal. At about 3:42, after the operation was nearly completed, the chloroform mask was removed, as the pupils were well contracted and the patient fully anesthetized. At 3:44 without any warning whatever, the pulse from an even regular one of about 80 or 90 suddenly began beating too fast to count, more than 200. The respirations remained unimpaired. We administered 1-100 grain of nitroglycerin hypodermatically, the dressing was hastily applied and the patient put to bed. While his pulse was in this condition and before he was removed from the table he raised his head and said: "Well, I'm glad I'm through with that chloroform." During the next hour 1-25 grain of nitroglycerin was administered, 1-100 grain of atropia and 1-32 of strychnia, without any effect as to lessening the rapidity of the heart beats. Hot water bags were applied to feet, and over the heart. Only at one time, and then for only four or five minutes, did he complain of dyspnea. He was convinced of the fact that he was going to die. The radial pulse all of this time, one hour, felt as if there were a constant current of blood under your finger, no pulsation was distinguishable, but the ventricular contraction was easily made out, much too rapid to count. His respirations were unimpaired, breathing through his nose, skin relaxed and moist, mouth dry from the atropia and finger nails pink. He was seen at 4:20 by Dr. Marvin in consultation; ¼ grain of morphia was given at his suggestion hypodermatically, ice was substituted over the precordia, and in twenty minutes the pulsations could be felt, not counted at the wrist, but the ventricular contractions could be counted 160 to the minute. His pulse remained in this condition until 7 P.M., when it

again became rapid, beating 200 to the minute. A second dose of morphia, ¼ grain was given hypodermatically, and at 8 P.M., his pulse was 97, and the patient sleeping quietly, having vomited some water which had been taken in the shape of crushed ice. During the night he slept at intervals and the hourly pulse was as follows, beginning at 7 P.M.: Two hundred, 97, 98, 92, 88, 80, 80, 81, 78, 78. At midnight one teaspoonful of aromatic spirits of ammonia was given.

The case seems to be a unique one as well as instructive. Here was a man who apparently was a good subject for anesthization and without warning the above complications arose. It teaches us that the rule laid down by most authors as to the careful watching of the respiration alone is erroneous. Had this man's condition not been noted, and the operation only partially completed, and had more chloroform been given, I believe he would have died. Hence the practical conclusion, watch the heart always, as well as the respiration. The second lesson is the danger of being too zealous in the application of restoratives, owing to anxiety as to the safety of your patient. There was in all probability too much given this man.

This case is entirely unique in the writer's experience, nor have I seen any such case in the literature of the subject.

DISCUSSION.

DR. BAILEY—The subject of anesthesia is a big one. As to the case reported, I would criticise it first, because Dr. Tuley said the patient was a vigorous healthy man; I find these the worst cases. I think his condition was peculiar and not developed by the anesthesia in the light of his present condition.

There was a bad nerve force present. As to the management of the case, with the rapid heart, nitroglycerin should not have been given. I should rather have chosen digitalis or digitalin because of its influence on the inhibition. I should have used moderate doses of morphin—should not have ventured 1-4 grain but have given 1-8 grain and waited for effects.

I think constantly of the possible evils of the Hyderabad Commission, in recommending that the respiration be watched and not the pulse. Notwithstanding that report, I am more anxious to watch the pulse, and I endeavor to look after both. I disregard the pulse in etherization, but not in chloroform. I am sure I have given chloroform in more than one thousand cases, and I am firmly convinced of that fact.

DR. F. C. WILSON—The case reported is an interesting one and shows the necessity of careful watching. To watch the pulse and respiration both, the anesthetist has his hands full. He should also watch the countenance. Anesthesia must be profound in operations upon the rectum, and because of that fact the danger is enhanced. If the previous attacks had been known in this patient, in all probability the case would have been watched for a recurrence, but I doubt if the case could have been watched more closely, or the tachycardia noticed earlier than was done by Dr. Tuley. Like Dr. Bailey I should not have given nitro-glycerin, but think that digitalin was indicated; strychnia also, as was given, morphia and perhaps spartein; the latter given previous to the administration of the anesthetic fortifies the heart, and those cases in which I have used it have done well, the heart maintaining its strength throughout the anesthesia.

DR. BAILEY—I would like to state that as to complete anesthesia, it is difficult to bring anesthesia to a proper stage for divulsion of the sphincter, and there apparently is pain. Lauder Brunton said that no operation should be done unless there was complete anesthesia. It may be possible that the case was not fully anesthetized, and the reflex caused the tachycardia. No operation should be done unless the anesthesia is complete.

DR. VANCE—I believe that in local anesthesia the shock is not so profound. We used to see great shock from the removal of a toe nail under general anesthesia. Since cocain has been introduced we see less of it, the nerves are benumbed locally, and they are prevented from transmitting any shock. I believe that all operations should be done under complete anesthesia. The greatest accidents are when we operate under primary anesthesia. Local anesthesia proves that the shock is reflex, as it is in the divulsion of the rectum.

DR. W. C. CHAPMAN—It has been noticed how frequently tachycardia occurs in tobacco users. I never examine tobacco users that I don't find them with a pulse rate of ten to twenty above normal. Tachycardia is not present at all times, and may be brought on by other causes, as a latent malaria may develop after a surgical operation, so an indigestion and excesses may cause tachycardia.

DR. DUGAN—I have had two fatal cases under chloroform anesthesia. Neither used tobacco, for they were both ladies; both occurred within a week of each other. The first one was an operation for ovariotomy; there was only one inhalation, the patient called for "a candle, a candle," being a Roman Catholic, in one breath. The lips became livid, the heart's action stopped. I thought that perhaps it was partially from pressure by the large tumor, and plunged my knife through the abdominal wall and relieved that by letting out the fluid, but the patient never rallied. This case was on Sunday, and the following Tuesday I wished to divulse a rectum for fissure. The patient was not excited, her heart was good, pulse regular. She was rather inclined to be fat, but took the anesthetic like a baby. When Dr. Guest said she was ready, I introduced my thumbs and divulsed; there was no pain, no resistance, chloroform was withdrawn, and the patient was sponged off. In half a minute, Dr. Guest seemed concerned, and said the patient was not breathing well. I noticed some lividity of the face. She was suspended, artificial respiration performed, and at no time during the forty-five minutes we worked with her did she show pulse or respiration. She was healthy, a non-tobacco user, and drank little tea or coffee. We can not tell when these cases will do badly. The shock could not have been due to the divulsion, and Dr. Guest estimated that only 30 minims had been used altogether.

DR. J. B. BULLITT—Dr. Wright, of Bowling Green, has in the last few months reported several cases of the new-born asphyxiated, in whom respiratory effort was established by the introduction of the tip of the index finger in the anal orifice, producing thereby a dilatation of the sphincter. There was complete asphyxiation, absolutely no respiratory effort, but immediately on dilatation of the sphincter ani, respiration was established and the infant began to cry lustily. He also suggested the adoption of similar means to restore respiratory effort in unfortunate cases of anesthetization. This fact would appear to throw some light on the subject in hand. It is generally conceded that death from chloroform occurs primarily from respiratory failure, the heart failure being secondary. It hardly seems probable that dilatation of the sphincter ani could produce respiratory effort on the one hand (asphyxia neonatorum) and yet produce a paralysis of effort on the other (chloroform narcosis). There seems to be here an incompatibility of effects. It would seem probable, that what really happens is this: divulsion of the sphincter before narcosis is surgically complete causes deeper respiratory effort, thereby a largely increased amount of the anesthetic is thrown suddenly into the circulation, so that the centers are overwhelmed and respiration suddenly ceases. It is not the "shock" *per se*, that has done the mischief, but its respiratory effects. In such a case, if the anesthetic were withdrawn and the divulsion of the sphincter ani again practiced, it would seem quite probable that respiratory effort would again be stimulated as suggested by Dr. Wright.

DR. RODMAN—We never know when accidents will occur. If deaths are more likely occur from partial anesthesia, why do they not occur without any anesthesia in minor operations? Certainly if a little pain is so dangerous, we would have many deaths where no anesthetic is given. I do not believe Dr. Bailey's explanation the true one. I think it is best to have light anesthesia in the condition of shock. I am satisfied that the danger is in proportion to the amount of chloroform vapor in the blood at any given time. There have been more deaths reported in the last few years than ever before in the history of chloroform. In Germany, chloroform used to be given almost exclusively, but ether is now being extensively used. There have been five or six deaths in Louisville in the past eighteen months from chloroform, and there were none for five years previous that I remember. It may be that the chloroform we use now is not so good, but the chemists say it is better. A statement was made recently by the Professor of Therapeutics in the Johns Hopkins Hospital, that if we give chloroform to a dog once it bears it well, and will have no bad effects, but if it is given the second time it kills, but this is not so of ether.

Hare, in a paper on chloroform, makes the statement that instead of lowering the head it should be thrown forward as that position opens the epiglottis. Notwithstanding chloroform has been a favorite in Louisville for so many years. I am an advocate of ether. It can be incontestably shown that ether is safer than chloroform.

DR. I. N. BLOOM—The history of anesthesia shows ether to be the safer. It is rare that death occurs in complete anesthesia. Statistics will prove this.

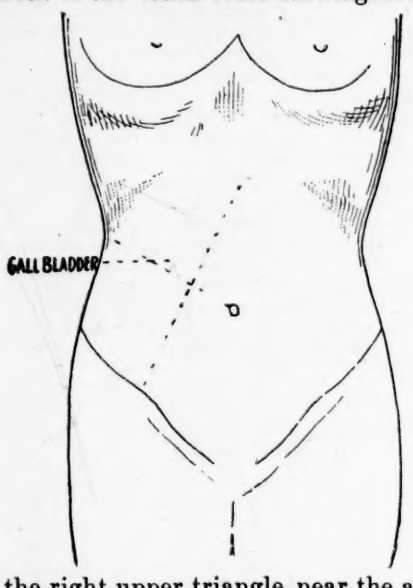
DR. DUGAN—I would like to add that I saw a patient operated on by Dr. Weir for a nephrectomy, die under the anesthetic, having taken it twenty-one times before.

DR. TULEY—I simply want to state that nitro-glycerin was given in the case reported, because there was a good effect noticed from it, in that the pulsations at the wrist could be felt after each dose. Digitalin was thought of but none was at hand. The divulsion was practiced without causing any impression upon the patient.

THE NORMAL SITUATION OF THE GALL BLADDER IN MALES.

BY JOHN B. HAMILTON, M.D.
CHICAGO.

To find the gall bladder, draw a line from the anterior superior spinous process of the ilium to the center of the xiphoid appendix. Intersect this with a line from the umbilicus to the tenth costo-cartilaginous junction. In the right upper triangle near the apex, but nearer the right oblique line, the fundus of gall cyst will be found. A needle thrust through the abdomen at the point indicated, will usually transfix the gall bladder. The position of the gall bladder varies with the changes in the position of the liver; in enlargements it is pushed downward, and in some cases deflected to the right.



ORIGINAL INVESTIGATIONS ON THE NATURAL HISTORY, (SYMPTOMS AND PATHOLOGY) OF YELLOW FEVER. 1854–1894.

BY JOSEPH JONES, M.D., LL.D.
NEW ORLEANS, LA.

(*Continued from page 520.*)

CHAPTER VIII.

EFFECTS OF JAUNDICE UPON THE FREQUENCY OF THE PULSE.

Case 1.—Malarial fever, dysentery and jaundice. A. F., age 32; native of Germany. Entered Charity Hospital Dec. 29, 1875. Had had intermittent fever. Says that he has been sick with intermittent fever and dysentery for fourteen days. Upon entrance presented a pale sallow, bloodless hue, and suffered from painful discharges from the bowels, of mucus and blood at regular intervals. On January 1, the patient showed a distinct yellow tinge of the skin and conjunctiva of the eyes, which gradually increased to the most intense jaundice in the course of ten days. The urine was heavily loaded with bile, but free from albumin. The pulse which had been rapid and feeble, ranging from 100 to 120, became much slower after the supervention of the jaundice. The effect of the bile in the blood upon the frequency of the pulse is shown in the following table:

Date.	Pulse.		Resp.		Temp.	
1875	M.	E.	M.	E.	M.	E.
Jan. 13	. . . .	70	. . . .	. . . .	. . . . .	99 °
14	. . . .	70	. . . .	32	. . . . .	101
15	. . . .	80	. . . .	36	. . . . .	100
16	70	80	28	32	99 °	101
17	100	100	24	32	101	104
18	80	92	32	32	98	102
19	70	92	24	32	99.5	103.5
20	72	80	28	36	99.5	103.5
21	80	88	20	20	98.5	103.5
22	76	84	24	24	99.5	101
23	76	72	32	24	99.5	100.5
24	72	68	28	28	99.5	100
25	. . . .	80	. . . .	20	. . . . .	99.5
26	72	72	36	40	97.5	98.5
27	72	76	40	36	99.5	99
28	60	72	36	32	98.5	100
29	72	64	32	32	99	99.5
30	60	64	28	36	99.5	100
31	. . . .	68	. . . .	32	. . . . .	99
Feb. 1	68	68	40	32	99.5	99.5
2	68	. . . .	32	. . . .	98.5	. . . . .

The periodic variations of the temperature in this case were regarded as the result of the action of the malarial poison. It will be observed that in this case after the supervention of jaundice, the pulse was only 100, with a temperature of 104 degrees F., and on January 20, the pulse was only 80, with a temperature of 103.5 degrees F. On the 30th the pulse was only 60, notwithstanding the continuance of the dysentery, with frequent discharges from the bowels.

The treatment of this case consisted mainly in the rigid adherence to milk and rice diet and beef tea, and the employment at regular intervals of a mixture of quinin, subnitrate of Bismuth and Dover's powder; in the proportion of 3 grains each of quinin and Dover's powder, and 10 grains subnitrate of bismuth, every three, four or six hours. These powders were also alternated with a simple mixture of syrup of morphia and subnitrate of bismuth, or with a mixture composed of equal parts of the tinctures of catechu, opium, camphor, capsicum and Peruvian bark, a teaspoonful in a wineglass of water every three or six hours. Port wine and alcoholic stimulants in small quantities were also found to be beneficial. This was a protracted and tedious case, but the patient was finally restored to health and was discharged in the month of March.

Case 2.—Malignant scarlet fever attended with jaundice; slow pulse, recovery. Adam Grethiel, age 19; native of New Orleans. Entered Charity Hospital Feb. 11, 1876. February 11, deep scarlet eruption; where the eruption is not very great the skin presents a yellowish tinge. Conjunctiva of eyes yellow. Mucous membrane of throat and tonsils swollen and ulcerated. Tongue dry and red; patient swallows with difficulty; hemorrhage from the mouth and gums; wild delirium; necessary to confine the patient to bed. Has been sick about one week. Abscesses are beginning to form near the elbows and at the extremities of the fingers; P.M., pulse 100, respiration 48, temperature 103.5. February 12, A.M., pulse 100, respiration 36, temperature 102; P.M., pulse 108, respiration 28, temperature 103. Desquamation is beginning, and as the scarlet color diminishes, the deep yellow color becomes more manifest. February 13, A.M., pulse 100, respiration 36, temperature 100; P.M., pulse 124, respiration 36, temperature 103.5. February 14, A.M., pulse 88, respira-

tion 28, temperature 100; P.M., pulse 100, respiration 32, temperature 99. The pulse continued to decline in frequency and on the 16th was 72, with a respiration of 24 and temperature 101. It would consume too much space to present the numerous details relating to the pulse, respiration and temperature in this case; the pulse, however, continued to grow slower notwithstanding the condition of the throat and the formation of abscesses and on the 19th the pulse was 68, respiration 24, temperature 101; on the 22d, pulse 64, respiration 20, temperature 100.5. The patient finally recovered entirely.

Case 3.—Pneumonia, with intense jaundice; albumin and bile present in the urine, chlorids absent; frequency of the pulse diminished by the bile in the blood. John T. Webb, age 37, native of Maryland. Has resided in New Orleans for eighteen months. Entered Charity Hospital January 8 in a restless sleepless state and apparently suffering from alcoholism. Patient states that he "had been drinking very hard before entering the hospital." The bowels were opened with the compound cathartic pill (U. S. P.), and the nervous agitation was measurably relieved by bromid of potassium in combination with liquor ammoniæ acetates. On January 10, the patient complained of pain in the right side, with cough and oppression of breathing. Dullness upon percussion, with crepitation over lower and middle lobe of right lung. Pulse and respiration greatly accelerated, temperature elevated. January 11, evident marks of pneumonia of right lung; the conjunctiva of eyes and skin present a distinct yellow tinge. January 12, jaundice well marked, high fever, pulse decreasing in frequency, falling from 130 to 112. Bile and albumin present in urine, chlorids entirely absent. There is no hepatic tenderness.

January 13, cough, pneumonic sputa, headache, pain in back and limbs; no hepatic tenderness, albumin and bile in urine, chlorids absent. Skin of a golden yellow color, conjunctiva of eyes yellow. Patient complains of great depression of spirits and restlessness. At 8 A.M., pulse 100, temperature of axilla 101. 14th, A.M., pulse 128, respiration 32, temperature 99; P.M., temperature 102. 15th, P.M., pulse 100, respiration 32, temperature 99.5; P.M., temperature 100.5. 16th, A.M., pulse 100, respiration 20, temperature 99.5; P.M., pulse 109, respiration 32, temperature 99. 17th, A.M., pulse 108, respiration 28, temperature 100; P.M., pulse 112, respiration 24, temperature 101. 18th, A.M., pulse 88, respiration 24, temperature 98.5; P.M., pulse 100, respiration 32, temperature 101. 19th, A.M., pulse 100, respiration 28, temperature 100; P.M., pulse 100, respiration 24, temperature 102. 20th, A.M., pulse 100, respiration 32, temperature 99.5; P.M., pulse 100, respiration 28, temperature 101. 21st, A.M., pulse 84, respiration 32, temperature 98.5; P.M., pulse 88, respiration 32, temperature 101. 22d, A.M., pulse 80; respiration 32, temperature 98.5; P.M., pulse 100, respiration 40, temperature 101.5. 23d, A.M., pulse 72, respiration 32, temperature 98.5; P.M., pulse 92, respiration 32, temperature 101.

Convalescence was tedious in this case, but the patient was discharged on the 23d. In the intensity of the jaundice and in the presence of albumin in the urine this case upon a superficial examination resembled yellow fever. The effect of the bile in the blood on the action of the heart will be still further evident by comparing the variations of the pulse and temperature in the three preceding cases, with the three following:

Case 4.—Pneumonia of right lung, rapid pulse, rapid respiration and elevated temperature—fatal issue. Thomas Gegan, age 20, native of Ireland, baker. On Feb. 10, 1876, went to sleep on cold ground, and on awakening suffered with severe pain in the right side. Entered Charity Hospital Feb. 17, 1876. He says that he has been sick with fever and severe pain in the right side for five days. February 17, evening, pulse 140, respiration 48, temperature 105.5 F. Some pain in right side, with cough but little expectoration; sputa contains much pus mixed with the rusty colored fibroid matter. Crepitation and dullness over right lung and over lower lobe of left lung. A cavity is evidently forming in the infraclavicular region of the right lung. Percussion gives the cracked-pot sound, and auscultation reveals amphoric respiration. The purulent matter comes from this cavity in great measure. February 18, A.M., pulse 140, respiration 44, temperature 105.5; P.M., pulse 128, respiration 40, temperature 106. No albumin in urine, bile present, chlorids wholly absent; specific gravity 1010. 19th, A.M., pulse 140, respiration 36, temperature 104.5; P.M., pulse 140, respiration 36, temperature 104.5. 20th, A.M., pulse 146, respiration 48, temperature 106; P.M., temperature 103.5. 21st, A.M., pulse 140, respiration 36, temperature 105; P.M., pulse 140, respiration 24, temperature 103.5. 22d, A.M., pulse 148, respiration 28, temperature 105; P.M., pulse 144, respiration 24, temperature 104.5. 23d, A.M., pulse 120, respiration 28, temperature 103.5. On the 20th the patient became delirious, with occasional lucid intervals and died on the 23d.

We might greatly multiply such cases, but they have been illustrated in the first volume of my "Medical and Surgical Memoirs."

Case 5.—Chronic malarial poisoning and intermittent fever, illustrating the rapid circulation in this disease. J. Hogan, age 29, native of New Orleans, carpenter, admitted to Charity Hospital Oct. 21, 1875; has been working on Baker River, Louisiana, and has suffered with intermittent fever for two months. October 23, sallow anemic complexion, presenting a dusky greenish-yellow color; has fever as in chronic malarial poisoning. A.M., pulse 122, respiration 32, temperature 103.25; P.M., temperature 102. 24th, A.M., pulse 128, respiration 36, temperature 103; P.M., temperature 101.5. 25th, A.M., pulse 130, respiration 24, temperature 101.5; P.M., temperature 101. 26th, A.M., temperature 100; P.M., temperature 102. 27th, A.M., pulse 100, respiration 24, temperature 101.5, P.M., temperature 102. On October 25 I administered to this patient, in addition to the full doses of quinin, tincture o digitalis. The reduction of the frequency of the pulse was marked and rapid. In this case with a temperature of 101.5, the pulse reached 130 beats per minute. The urine was high colored, but contained no albumin.

Case of circumscribed pneumonitic pleuritis; rapid pulse; fall of pulse after effusion into pleura and lungs. George Allen, sailor, entered Charity Hospital Jan. 18, 1875. January 19, pain in left side; hurried respiration; pleuritic friction sound and crepitant râles in lower and middle lobes of left lung; delirium. A.M., pulse 150, temperature 103.6. 20th, A.M., pulse 120, respiration 45, temperature 101.5. 21st, A.M., pulse 112, respiration 36, temperature 99. The urine was loaded with urates but contained no chlorids. Albumin absent. The dullness upon percussion increased, effusion has taken place and with it the temperature has fallen and the pulse has become slower.

January 22, A.M., pulse 72, respiration 20, temperature 97.7. 23d A.M., pulse 72, respiration 25, temperature 97.8. The delirium and mental aberration continued for four days and was followed by two days of sleep and drowsiness. Patient recovered.

It will be observed that in this case of circumscribed pleuro-pneumonia the pulse was 150, with a temperature of 103.6 degrees.

Case 6.—Typhoid fever and double pneumonia, rapid pulse, high temperature; death on thirteenth day of disease. Thomas Feverson, age 22, native of Norway, sailor. Has been in New Orleans during the past five months; came direct from Europe. Entered Charity Hospital Feb. 1, 1876. At time of entrance had fever, which was wholly uninfluenced by quinin which was daily given for four or five days without any manifest effect. February 4, P.M., skin hot and dry; dichrotic pulse, 160 per minute, respiration 28, temperature of axilla 103.5. Dullness upon percussion over lower lobes of both lungs, with crepitant râles and rusty colored sputa. Epistaxis, delirium, subsultus tendinum. Tenderness in right iliac region, with some gurgling; bowels slightly tympanitic; stools not frequent but loose. Passed excrement and urine in bed; sordes on teeth; tongue red and dry, not furred. The tympanitis has been greatly relieved by turpentine stupes over chest and abdomen. Chlorids absent from urine; high color. Albumin present in small quantities in urine. February 5, ninth day of disease, morning, pulse 100, respiration 24, temperature of axilla 100. February 6, tenth day of disease, morning, pulse 100, respiration 20, temperature 100; P.M., pulse 112, respiration 32, temperature 104. 7th, A.M., pulse 120, respiration 36, temperature 102; P.M., pulse 130, respiration 40, temperature 106. 8th, A.M., pulse 120, respiration 40, temperature 103.5; P.M., pulse 136, respiration 48, temperature 106. 9th, A.M., pulse 160, respiration 40, temperature 104. Patient died February 9, at 12 M.

Autopsy twelve hours after death. Thorax: Heart normal, cavities contained no blood. Lungs: right lung did not collapse when the pleura was opened; lower lobe in second stage of pneumonic inflammation, left lung adherent to walls of chest by old pleu-

ritic effusion. Lower lobe like that of right lung, congested and solidified and in second stage of pneumonic inflammation.

Abdominal cavity: liver, spleen and kidneys normal. Gall bladder distended with bile. Peyer's patches in ileum, prominent with ulcerations; solitary glands of small intestines and especially of ileum enlarged and ulcerated. White deposits in Peyer's gland and solitary glands.

In a case of yellow fever, which terminated fatally in the month of November, in the ward directly opposite to the one in which the preceding case was located, the temperature on the third and fourth day of the disease reached 104, while the pulse never exceeded during this period 100. This case (Martin H. King, a native of Ireland, age 26) terminated fatally on the fourth day; and the post-mortem examination revealed the characteristic lesions of yellow fever; fatty yellow heart, liver and kidneys; black vomit in stomach; mucous membrane of stomach highly congested.

(To be continued.)

SOCIETY PROCEEDINGS.

Proceedings of the First Meeting of the American Academy of Railway Surgeons.

Held at the Grand Pacific Hotel, Chicago, Ill., Nov. 9 and 10, 1894.

(Concluded from page 448.)

The Academy then discussed the subject of

INJURIES OF THE TENDONS IN RAILWAY ACCIDENTS.

THE CHAIRMAN—Inasmuch as none of the essayists are present, we will proceed to a general discussion on this subject. Nothing troubles me more than injuries of the tendons. I want to hear what the members have to say. I expect to get some wheat and a lot of chaff as usual, but I will try and save the wheat.

DR. R. HARVEY REED—There is no question but what the subject of injuries of the tendons is one that is important to the railway surgeon. I do not think in any of the previous meetings of railway surgeons that I have attended in this country that this question has been discussed. Not a paper has been written on the subject, and yet at the same time the surgeon every now and then encounters a case of injury to the tendon that gives him more or less trouble. A traumatism to a tendon is bound under ordinary circumstances to give permanent injury, and where permanent injury occurs to a person riding on a railroad it usually means damage and loss of money to the company. We may have a tear of the tendon from its insertion; we may have a rupture in the body of the tendon itself. These are the two most frequent injuries I have met with or that are taught in our text-books, although there are other varieties, but in the treatment of injuries of tendons our text-books nearly all advise placing the arm or leg in a position in which the muscles can be relaxed, placing the tendon in the most relaxed position and keeping it there until the reparative process takes place. In my experience that is absolutely impractical, and I think if we rely on our success in treating cases in this way we will find ourselves defeated in our object. In the first place, you can not hold any tendon of any consequence in its place by a bandage. In the second place, if you bandage the tendon tight enough to come near holding it you cut off the circulation and if you do that you interfere with nature's process, and you can not have a normal reparative process. We recognize this as an important matter and one which we should seriously consider. When we have a simple tear of a tendon we should make it a compound injury instead of a simple one. With the present advantages offered us by antiseptic and aseptic surgery, I think we are justifiable in making a simple injury of this kind a compound one. It is our duty to explain to the party injured the importance of doing so and the danger of permanent injury if it is not done. If we had a tear, a fracture, a solution of the continuity of the tendon in the middle part of it, we may have so much contraction as to be unable to bring the two ends of the tendon together. Then what are we to do? We are taught to build a bridge of catgut between the two points and we would expect a reparative process to go on the same as in bone or sponge grafting. We bring the two ends of the tendon together with catgut and therefore aid the reparative process and fill up the space with connective tissue. The difficulty with this method is to get your catgut sufficiently strong so that it will bear the tension brought on it by the muscle—*i.e.*, the biceps or the gastrocnemius, as the case may be. It is quite difficult to get enough catgut interlaced to hold the tendon solid without destroying so much tissue in the tendon as to impair or even prevent the reparative process and thereby induce sloughing of the ends of the tendon. If you get the catgut to remain in its place you are liable to have adhesions of the sheath of the tendon, and are liable to set up thecitis, and have these adhesions extending from the sheath of the tendon to the muscles, thus impairing the activity of the tendon which we desire to obtain if possible. I think the better plan is to lengthen the tendon by the ordinary methods, which you all understand, of cutting into the tendon above at this point (illustrating), and cut down near the end, turn the piece around and do the same way below, bring the two parts together, and it requires only a few short sutures to hold them in place; at the same time you lengthen the tendon. Instead of building in a bridge of catgut you simply lengthen the tendon with its own substance, and the reparative process goes on satisfactorily. On the other hand, if you have to suture the tendon in order to bring it together, I prefer silkworm gut to catgut or silk, as the silkworm gut is stronger and less liable to become septic, and when put in position it remains unabsorbed for a long time. I have had very satisfactory results from its use. It seems to me with all of these different methods—any one of which you may adopt—it is highly important that you warn the patient against the possibilities of impairment of motion in cases of this kind. I recall a case I was called to treat a few months ago. In attempting to lift a barrel of salt, a railway employee tore the tendon of the long head of the biceps from its insertion. I made an incision in a line with the normal position of the tendon, beginning the incision just below the fibers of the deltoid and extending it downward some two inches. I found the muscle contracted, and the tendon coiled up with the belly of the muscle midway between the shoulder and the elbow. After fishing out the tendon I passed a strong double silkworm gut ligature through it, which I attached to a long needle. I carried this needle up the groove for the tendon under the deltoid and pectoralis major fibers to its normal point of insertion where I firmly anchored it subcutaneously. By this method I replaced the dislocated tendon besides anchoring it firmly at its normal point of attachment. By placing the arm in a Velpeau bandage the muscle was relaxed and the result was a speedy and very satisfactory recovery, with good use of the arm.

DR. R. S. HARNDEN, of Waverly, N. Y.—I desire to express my pleasure at hearing the remarks of Dr. Reed in regard to this subject. It seems to me important, simply from the fact that it has received so little attention, also because of its importance with regard to the prospective feature of damages to railway companies. Some ten or twelve years since I undertook to suture tendons and, while I think at that time we were usually advised against suturing them, I undertook to go against that advice. I sutured the tendon in a case to relieve the patient from deformity and I had the usual result, I suppose—a thecitis which alarmed me—and I proceeded to take out my suture and made up my mind that I would never use one again. I thought I had acted unwisely in going against what I supposed was authority in the matter. This subject was held in abeyance by me until the advent of aseptic treatment. Since that time I have used sutures in tendons with invariably good results, and I have become satisfied that the suturing of tendons is not only feasible, but proper, whether authority in the past has recommended it or not. The method of suturing tendons to overcome the natural shortening and contraction, as Dr. Sayre puts it, is something original. I would like to ask the Doctor if it is not a new method of suturing?

DR. REED—Yes, it is a comparatively new method.

DR. HARNDEN—It overcomes the natural method of shortening in a tendon. I would also emphasize the use of antiseptics and experimentation in this direction, because I think this subject may still become more important and useful to us.

DR. F. H. CALDWELL, of Sanford, Florida—I do not have a great deal of this work to do, but I have sutured some tendons, and have to report in a majority of cases that I have

given relief to the unfortunate ones. By releasing the tendon from its surrounding adhesions I have been enabled to render the limb fairly useful, after making a resection and by suturing. I have never tried the plan mentioned by Dr. Reed of lengthening the tendon.

DR. F. H. PECK of Clinton, N. Y.—In incised wounds of tendons it is a very simple thing to put in a buried suture, making an end-to-end approximation of the tendon and getting a very nice result. In the class of injuries we are called upon to treat as railway surgeons, we are liable to get a contused wound of the tendon which will cause sloughing of the bruised parts and consequent shortening and contraction, and it seems to me it is important that when the tendon is likely to slough we should excise the bruised ends and then make our lengthening of the proximal and distal fragments of the tendon by the method that Dr. Reed has already mentioned.

DR. L. E. LEMEN, of Denver, Colo.—I have tried the plan that has been mentioned, but in the last six or eight months, in addition to suturing after rendering the wound as aseptic as possible and removing the bruised tissues, I have been in the habit of dusting the tendon, before I sew up my incision, with stearate of zinc, thereby preventing adhesion of the tendon to its sheath. You will be surprised how nicely it works. The stearate of zinc will remain for quite a while. You apply it to the wound and then seal it over. It is simply to prevent mechanical adhesions of the tendon to the sheath.

DR. REED—Do you not have to make it aseptic in order to avoid sepsis?

DR. LEMEN—I render the wound antiseptic before I apply my suture and then wash it afterward. I do not use it as an antiseptic, but simply to prevent mechanical adhesions. It is one of the best powders for eczema or galling, or of any surface that is raw. I simply use my finger and rub it all around the sutured ends of the tendon until I varnish it over, so to speak, and sew the parts together. I have a great deal less trouble in having the tendon itself unite since practicing this plan.

DR. REED—I am not sufficiently familiar with the stearate of zinc to know whether it is antiseptic or not, or whether if we were to put in a wound, it will be the means of infecting the wound, or whether it would be necessary to submit it to any process by which it could be made aseptic. I heard a prominent surgeon advocate making antiseptics aseptic a few days since. Is this one of this kind?

DR. LEMEN—In cases in which I have used stearate of zinc, I will say that I have had union by first intention.

DR. C. M. DANIELS, of Buffalo—I think Dr. Reed and Dr. Lemon struck the keynote of this question when they referred to antiseptic treatment. Many years ago it was considered by leading surgeons almost criminal to perform subcutaneous tenotomy, but we have reached a point where we can incise tendons and suture them with a considerable degree of success.

DR. HARNDEN—I would suggest one point in regard to the prognosis that seems to me important, as we are working for the interest of science and admittedly for the interest of the companies we represent. Inasmuch as there is a prospective feature of damages always in sight, I believe it is admitted that in a resulting contracture from injury to the tendons there is the feature of damages. Now in the light that has been given us by Dr. Reed's description of this operation, which seems to be very valuable, can we not render the prognosis of cases of thecitis, or the result of an injury to the tendons where contracture has taken place, more favorable, thereby benefiting the company and science as well by this operation? I simply call attention to that point.

DR. JOHN E. OWENS of Chicago—I feel somewhat handicapped in discussing this subject, as I did not hear the paper. I may say, however, that the prognosis after operations upon tendons is most favorable, not only when done at early, but at remote periods, and particularly is it the case if you can bring the two ends of the tendon together, after having prepared them for suturing. I think that this can be done by certain well-formulated operations for splitting and splicing one part with a piece taken from the other. It can be done by stitching the end of the divided tendon to the contiguous tendon, all of which you can do well, and I think it ought to go without saying that the prognosis after such procedures must be favorable.

Take, for instance, the case which I have in hand at the present time. It seems so simple that I feel like apologizing for mentioning it. The wound occurred across the dorsum of the hand of a patient during my absence, and when I returned to the city it was noted that the patient could not extend the middle finger. Two weeks afterward the ends of the tendons were readily united by making a longitudinal incision corresponding with the tendon, freshening the ends, bringing them together. The patient now has full control over the finger. If this case had been allowed to go on a considerable time without operation there certainly would have been added an element of cost which would have doubtless brought larger damages in case of a medico-legal contest. The time does not seem to cut a very important figure in the matter, because I have seen records of long periods after the accident where operations have been done for the purpose of uniting tendons to contiguous tendons for the purpose of restoring the loss of function. In the case referred to the question comes up when I ought to remove the splint. I am disposed to keep it there for six weeks, because on account of flexion I was afraid the new cicatrix might be gradually elongated and finally give way and the effect of the operation would be lost. I would say that rather long continuance of the splint seems to be essential.

DR. REED—Before the discussion is closed, there is one point that it might be well for us to remember, and that is when we make a tenotomy, we will say of the tendo-Achilles for shortening of some kind as the result of some accident or disease, we all know that union takes place subsequently. That is a fact which we should consider before treating a tendon by suturing. We all know that where the tendo-Achilles is an inch too short, by making a tenotomy there is an inch of space to be filled up. We understand that space is not filled up with tendon but with connective tissue that is built up during the reparative process by the proliferation of connective tissue cells and which unites the two ends of the tendon by this band of connective tissue. We must take into consideration that where we have a fracture of the tendon, where it is possible to immobilize the part and where shortening is not too great, we can depend upon the reparative process in cases of this kind. Under these circumstances, I would not advise making a compound wound of one that is simple when it can be repaired by nature in this way. In my former remarks I was speaking of the class of injuries of the tendon which could not be repaired in this manner. I think it is the proper thing to splice the tendon by the well-known methods of recent date, whether by suturing or otherwise, as the case may be.

The Committee on Constitution and By-Laws being ready to report on that part relative to the duties of the Editor, such report was made, and on motion of Dr. C. B. Parker, Cleveland, Ohio, adopted.

On motion of DR. R. HARVEY REED, Columbus, Ohio, the Constitution and By-Laws were then, as amended, adopted.

On motion of DR. C. K. COLE, Helena, Mont., the Secretary was instructed to have the Constitution and By-Laws printed and a copy sent to each Fellow of the Academy, together with a slip authorizing the Secretary to sign the Constitution and By-Laws for them.

On motion of DR. C. D. EVANS, Columbus, Neb., the Committee on Publication was authorized to secure certificates of fellowship.

On motion of DR. R. HARVEY REED, Dr. W. H. Elliott, Savannah, Ga., and Dr. L. E. Lemen, Denver, Colo., were appointed to conduct the newly elected President to the chair.

DR. COLE, in accepting the Presidency of the Academy, spoke as follows: Mr. President and Fellows of the Academy: I feel that it would be inopportune for me to attempt to make any extended remarks at this time. Because first, we have no time to devote to that sort of thing, and also, because I am totally unprepared to say what would seem befitting upon this occasion. I can do no more than to make my profound acknowledgments for the distinguished honor which you have voluntarily conferred upon me, and to say to you that I am not unmindful of the gravity of the duties which I shall assume in becoming the President of this organization. I desire to say further, that I pledge you in the interest of railway surgery that I will give my very best efforts in behalf of the institution which we have organized upon this occasion. In saying this, I am not saying any more than any gentleman has already said to himself, and whatever I may do, as well as the other officers of the Academy, will necessarily be entirely unavailing unless they are seconded by your efforts. While I think we all appreciate the fact that we have taken an important step, and one fraught with grave responsibilities and important possible results, I question whether we ourselves, notwithstanding the consideration we have given this matter, fully appreciate the step we have taken and the importance of this structure which we are about to rear. If the American Academy of Railway Surgeons fulfills its mission, we will have been factors in

making history in this country in connection with what is destined to be one of the most important branches of medicine—railway surgery.

Gentlemen, I trust you will excuse me and the embarrassment under which I labor. I feel keenly my inability to properly respond and give voice to the sentiments of my heart. I reiterate what I have previously said, that I will endeavor to the best of my ability to aid in advancing the objects and aims of this Academy and ask of you your indulgence and aid in furthering this plan. (Applause).

The following standing committees for the ensuing year were appointed by the President:

Committee of Arrangements: Chairman, Dr. A. D. Bevan, Chief Surgeon Iowa Central R'y, Chicago, Ill.; Dr. F. H. Caldwell, Chief Surgeon S. F. & W. R'y, Sanford, Fla.; Dr. J. H. Ford, Chief Surgeon, Big Four R'y. Wabash, Ind.

Committee on Transportation: Dr. W. J. Galbraith, Chief Surgeon, Union Pacific R'y, Omaha, Neb.; Dr. G. W. Hogeboom, Chief Surgeon, A. T. & S. F. R'y, Topeka, Kan; Dr. A. C. Scott, Chief Surgeon, G. C. & S. F. R'y, Temple, Tex.

After short addresses by the different officers elected, the Academy adjourned to meet in Chicago on Sept. 12, 13 and 14, 1895.

American Electro-Therapeutic Association.

Fourth Annual Meeting held in New York Academy of Medicine, New York, Sept. 25, 26, and 27, 1894.

WILLIAM J. HERDMAN, M.D., President.

(*Continued from page 522.*)

DR. G. BETTON MASSEY, of Philadelphia, read a paper on

THE GALVANIC CURRENT IN CATARRHAL AFFECTIONS OF THE UTERUS.

The keynotes to the prevailing methods of treating pelvic disease may be said to be the following pathologic dicta: That the cause of the given complaint is either 1, a narrow or constricted os, producing menstrual obstruction; 2, a bend in the neck or body of the uterus resulting in the same conditions; 3, a mechanical displacement of the uterus causing congestion, enlargement and even inflammation; 4, a laceration of the cervix or even the scar tissue resulting from it, causing enlargement of the uterus, congestion, and a host of reflex symptoms through the agency of the nervous system; 5, a salpingitis, unassociated with other conditions; or 6, a diseased ovary or ovaries, similarly unconnected with more important concurrent conditions.

These six generalizations in pathology do not cover the whole field of pelvic diseases, but any one conversant with the every-day practice of the average gynecologist will agree with me that they represent the conceptions formed by him in the majority of his cases. Some of these conceptions are of recent origin; others date from Marion Sims and his earliest followers, and have molded practice for forty years.

It is noteworthy that but one of these conceptions, that of salpingitis, has any bearing on the modern facts of bacteriology, the accepted facts of endometritis being really neglected in practice. This neglect of the germ theory in the pathology of uterine disease is even more remarkable, when we consider the importance accorded the same theory in the operative precautions of surgical practice.

It is my own conviction that a catarrhal affection of the uterine cavity is at the bottom of many of the complaints heretofore referred to various mechanical deviations in and about the uterus; that it is far more frequently the cause of menorrhalgia or menstrual pain than any alleged narrowing or bending of the cervical canal; that it is the prime cause of the enlargement that accompanies metritis, whether associated with laceration or not; and that it is the initial lesion in both salpingitis and oöphoritis, often persisting after their appearance as a most important factor in the case. Its relative importance when associated with these conditions is attested by the fact that in many instances it remains to annoy the patient after the cervix has been torn apart in one class or sewed up in another, after the pessary has been worn for years, or the tubes and ovaries have been removed from the body. The day is past when we can consistently expect to cure a microbically-produced proliferation of the uterine endometrium and parenchyma by stretching the cervix, by stitching it up, or by merely propping up a heavy or displaced organ; and the day is equally far past when we should expect to cure the same condition of the uterus by removing ovaries and tubes that have become affected by an upward extension of the process; yet at no time in medical history are these illogical procedures more frequently resorted to or more generally regarded as orthodox than at the present moment.

The opportunities afforded by the post-operative history of some of their cases has, however, had its effect on certain gynecologic surgeons who now announce their conviction that the uterus itself should be removed when operations are undertaken for diseased adnexæ, and from all over the land come reports of the performance of complete amputations and extirpations of this nature. This acknowledgment of their previously neglectful attitude toward the uterine seat of the catarrhal process would be more encouraging if it were not accompanied by the hopelessly pessimistic prognosis that advises amputation rather than an attempt to cure. Lawson Tait is said to have graphically answered a questioner as to his treatment of chronic metritis by thrusting a red hot wire into the uterine cavity of a patient on the table; but these gentlemen prefer the knife and total destruction to even this heroic treatment.

The members of this Association are thoroughly conversant with the admirable results to be gained from the use of the galvanic current within the uterine cavity in this intractable affection, yet I fear that the allied work in the treatment of true fibroid processes has cast somewhat into the shade this important additional contribution of Apostoli to our practical resources. To the general profession, itself, this work is almost unknown; a fact due not only to the pathologic errors alluded to, but to a misconception of the range of the activities of milliampere currents. To many physicians electricity is nothing but a nerve and muscle stimulant—actions extremely valuable, it is true, in relaxation of the uterus, but far less important than the alterations of tissue activities by which absorption and trophic regeneration may be initiated. In these catarrhal hyperplasias of the uterus, electricity has a fourfold value, combining within itself probably four times the usefulness of any other remedial agency, for it is at once an antiseptic, a stimulant to absorption, a nutritive stimulant and a means of lessening uterine bulk by contracting the uterine muscular tissue.

For therapeutic purposes, these cases may be divided into two classes: those in which the uterus is movable by reason of the fact that the catarrhal process has not yet ascended into the Fallopian tubes; and those in which the uterus has become adherent or fixed by a metro-salpingitis or its consequences. The movable class is by far the more readily cured by electrical applications. Any appropriately curved electrode may be used within the cavity, skillfully inserted, for the application of the negative pole of the galvanic current, though my practice of late is to more frequently employ the positive pole, necessitating a platinum electrode. This latter polarity is imperative in hemorrhagic cases, and is distinctly best if any form of discharge is abundant. Another reason for the use of the positive pole is its distinctly microbicidal power in doses above 50 milliampères, under the conditions of electrode surface existing in these applications. As to the question of the dosage used, however, I find that in my own practice it is more often below than above the figure mentioned, 35 or 40 milliampères being often the limit.

In the second class of affections, those in which the uterus, while yet retaining the initial catarrhal affection and its hyperplastic consequences, is handicapped by an extension of the chronic process upward along the tubes, with more or less adhesion between the diseased structures and neighboring surfaces, the intra-uterine treatment must be extremely circumspect. It is best preceded by a course of a vaginal galvanic applications by means of moist, cotton-covered electrodes and strong currents, with possibly the addition of calmant faradic currents. The intra-uterine treatment by means of galvanic currents will nevertheless be necessary if we expect to do more than alleviate this unfortunate condition, and it is employed in its least painful form if the elastic platinum instrument is used, either bare as ordinarily employed, or covered with cotton if the cavity is patulous and sensitive. In cases where the extra-uterine morbid conditions are of long standing, curative results are possible, though we must often be satisfied with a more or less permanent amelioration of the symptoms. With the cases of uncomplicated catarrhal hypertrophy, on the other hand, the results should always be perfect, the morbid conditions yielding slowly but surely to the directly applied alterative agency. Not only may a resolution of the uterine process be thus gained, but the disappearance of swelling about the uterine end of the tubes will permit catarrhal accumulations within the

No. of Case.	Age.	Duration of Disease.	Depth of Cavity. Inches.	Mobility.	Discharges.	Condition of Uterus.	Complications.	Mode of Treatment.	Results.
1	34	15 years.	3½	Fixed.	Slight muco. pus.	Moderately hypertrophied.	Left salpingitis deep laceration of cervix.	— Vag. followed by — intra-ut. 15.	Cure, followed by pregnancy.
2	27	1 year.	3¼	Movable.	Hemorrhagic, leucor.	Corporeal hypertrophy.	Deep stellate lac. of cervix.	+ Intra-ut. flex. elect. 30 and vaginal galv.	Improved.
3	26	2 years.	3	Movable.	Hemorrhage, leucor.	Slight enlargement.	Retroversion and stenosis.	+ Intra-ut. 25 (twice only).	Cure, followed by pregnancy.
4	34	8 "	3½ later 2½	Fixed.	Profuse, purulent.	Corporeal hyper.	Mono-lateral laceration.	+ Intra-ut. 25 to 65 with flexible elect.	Improved, followed by pregnancy.
5	21	2 "	3 to 2½	Movable.	Profuse, purulent.	Normal size.	Severe menorrhalgia.	+ and — intra-ut. 8 to 25 and vag. galv.	Cured.
6	22	1 year.	2½	Movable.	Inconstant mucoid.	Some enlargement.	Severe menorrhalgia.	+ Intra-ut. 50 to 40.	Cured, followed by two pregnancies.
7	38	3 years.	3	Movable.	Inconstant mucoid.	Hypertrophied.	First degree of prolapse.	+ Intra-ut. 70 and prim. farad.	Cure, with improvement of prolapse.
8	23	3 "	3½ lat'r 2½	Movable.	Constant muco. pus.	Hypertrophied.	Tenderness in left ovarian region.	—Intra-ut. 10 to 25 and +vag. 70.	Cured.
9	36	9 "	3	Movable.	None at pr's'nt	Moderate hyper.	Menorrhalgia.	+Intra-ut. 15 to 25 and vag. galv.	Cured.
10	27	8 "	3	Adherent.	Copious purulent.	Hypertrophied with large cavity	A lacerated cervix had been repaired without relief.	+Intra-ut. 35 and gen. galv.	Cured.
11	28	8 "	3	Movable.	Copious mucoid.	Corpus 2 in. in diameter, cavity large.	A lacerated cervix had been repaired without relief.	—Intra-ut. 20 to 35 and —vag.	Improved.
12	32	8 "	3+ lat'r 2½	Movable.	Slight inconstant.	Capacious cavity.	Tender and enlarged ovary.	+Intra-ut. 20 to 35 and —vag. galv.	Cured.
13	27	4 "	3	Adherent to left.	Inconstant.	Moderate hyper.		— Vag. 60 and farad. and + intra-ut. 20	Symptomatic cure, adhesions remain.
14	25	2 "	2½	Movable.	Profuse muco. pus.	Slight hyper.	Menorrhalgia.	+ Intra-ut. once only.	Cured, followed by pregnancy.
15	25	3 "	2½	Movable.	Profuse.	Slight hyper.	Menorrhalgia.	+ Intra-ut. 20.	Cured.
16	37	7 "	not soun'd	Fixed.	Copious purulent.	Hyperplasia.	Dense masses in region of both broad ligaments	+ Vag. 100 to 150.	Symptomatic cure, adhesions loosened.
17	22	16 mon.	3¼ to 2½	Movable.	Copious mucoid.	Engorged.	Nervous prostation.	+ Intra-ut. 20 to 25 and vag. galv.	Cured.
18	31	6 years.	4 to 2¾	Movable.	Moderate mucoid.	Hyperplasia.	Evidences of old pelvic inflam.	Intra-ut. alternatives 70 and vag. galv.	Cured, followed by pregnancy.
19	30	9 "	3	Movable.	Copious muco. pus.	Slight hyper.		+ Intra-ut. 20 and vag. galv.	Improved.
20	21	3 "	3¼ to 2½	Movable.	Mucoid.	Prolapsed uterus, with hyper.	Left ovary prolapsed.	+ Intra-ut. flex. elect. 25 to 40 and vag. gal.	Cured, ovary still lower.
21	25	1½ "	3	Movable.	Slight mucoid.	Hyperplasia.	Nervous prost.	— Intra-ut. 20 and vag. galv.	Improved.
22	29	7 "	3	Movable.	Profuse muco. pur hemorrhagic.	Stenosis, cervix.	Menorrhalgia.	+ Intra-ut. 20 to 50.	Cured.
23	24	7 "	3	Movable.	Copious mucoid.		Nervous prost.	+ Intra-ut. 25 and vag. galv.	Improved.
24	24	3 "	2½	Movable.	Copious purulent.			+ Intra-ut. flex. elect. 20 to 80 and vag. gal.	Cured, followed by pregnancy.
25	22	4 "	3 3	Movable.	Constant mucoid.	Moderate hyper.		+ Intra-ut. 20 to 35.	Cured.
26	26	6 "	3+	Adherent.	Profuse offensive, muco. pus.	Hyperplasia.	Prolapse of both ovaries and enlargement of left ovary.	+ and — intra-ut. 20 to 30 and secondary faradic.	Discharge, cured and enlargement lessened
27	26	4 "	3	Movable.	Profuse muco. pus.		Tenderness in ovarian regions.	+ Intra-ut. 50.	Cured.
28	31	3 "	3	Movable.	Profuse muco. pus.	Hyperplasia.		— Intra-ut. 50.	Improved.
29	26	4 "	2¾	Adherent.	Profuse purulent.		Tubes involved.	— Intra-ut. 50 and vag. galv.	Cured.
30	40	2 "	3 later 2½	Movable.	Hemorrhage, leucor.	Hyperplasia.		+ Intra-ut. 50.	Cured, followed by pregnancy.
31	30	3 "	3½	Movable.	Mucoid.		Tenderness and thickening at left broad lig.	— Intra-ut. 15 to 40 and neg. vag.	Cured.
32	30	1 year.	3	Fixed.	Muco. pus.		Tenderness and thickening at both broad lig.	— Intra-ut. 35 preceded by neg. vag. 50.	Symptomatic cure.
33	34	1 "	3 later 2½	Movable.	Muco. pus.	Hyperplasia and prolapsed.		— and + intra-ut. 50 to 75.	Improved.
34	38	5 years.	3½	Slightly adherent.	Muco. pus.	Hyperplasia and prolapsed.		+ Intra-ut. 25 to 50 (for two months.)	Greatly improved. Two years later hysterectomy with fatal results from supposed cancer.

latter to be drained through the uterus, several well-attested instances having occurred within my own experience.

Appended to this paper will be found a tabulated analysis of thirty-four unselected cases of catarrhal disease of the uterus which have been more or less under galvanic treatment. The histories were consecutively extracted records of my private and hospital practice, and state the results attained, so far as known, together with clinical and therapeutic data.

Of these thirty-four cases, twenty-four were found to be of the movable class, of which seventeen were cured and seven improved. Ten cases belonged to the adherent variety, of which four were cured and six improved. Eight of these patients are recorded to have become pregnant after the cessation of the treatment, six having been of the movable variety and two of the adherent.

DR. L. A. W. ALLEMAN, of Brooklyn, N. Y., read a paper on

ELECTRO-THERAPEUTICS OF DISEASES OF THE EYE.

It is not my purpose to enter into an exhaustive consideration of all the possibilities of electro-therapeutics in the treatment of ocular disorders, but to invite you to discuss with me some of the more important and better established indications for its employment.

In ophthalmic surgery, as in all other branches of medicine, the charlatan has found "electricity" a fruitful field for his endeavors. "To vivify the decaying nerve, by the tamed lightning," has proved a very catching phrase and the discouraged patient receiving no promise of relief from legitimate medicine, has again and again caught at this straw only to be disappointed. I doubt not that these perennial electric humbugs have done much to discourage the profession from enthusiastically investigating, and sifting out the really beneficial, from among the much that was worthless or actually harmful that has been asserted for electro-therapeutics. Then, too, the class of cases in which electro-therapeutics is indicated are, as a rule, chronic, and it is impossible that this, or any other treatment, will yield immediate and startling results, and patient and practitioner are apt to become discouraged, and abandon treatment before sufficient time has elapsed to render an appreciable improvement possible.

I am, however, convinced, that used intelligently and perseveringly, we have in electro-therapeutics, an agent which in certain classes of ocular disorders is of the utmost utility, and one which will yield us results which can be obtained by any other method with difficulty if at all; and I am farther convinced that the scope of its applicability will be found to broaden in the light of farther experience.

There are already many conditions in which the indications are clear and the results immediate and definite. Such for example, as when an annoying irritation is kept up in the eye, by the presence of lashes which either through a faulty position or direction rub against the ball. When this condition extends to a part of the lid only, (partial trichiasis) electrolysis furnishes the best method of treatment at our command. For this procedure, no special apparatus is required beyond that necessary in ordinary office practice.

A battery of eight or ten cells, a milliampèremeter, an electrolysis needle (it is much preferable to use a stronger battery and a rheostat,) are all that is required.

Platinum needles are often employed for electrolysis; but a very fine steel needle is more serviceable in destroying cilia. I prefer a needle holder without a circuit breaker; it is sufficiently difficult to insert and hold a delicate needle in the hair follicle, without the unnecessary manipulation of working the circuit breaker with the fingers. The circuit can be closed by a floor button by an assistant, or by the patient, who presses the anode upon the skin when directed. The anode should be large and well moistened.

The patient should be placed in a reclining chair, with the head comfortably fixed on a rest, and in a good light. The whole success of the operation will depend upon reaching with the needles the bottom of the hair bulb which is to be destroyed, and if this is properly done there should never be any question of the permanency of the relief afforded; as these hairs are often set very obliquely. This is by no means an easy task and one has to learn by experience the sensation of resistance which is experienced when the needle leaves the follicle. The needle (the kathode) being well down past the bulb, the circuit is closed and a current of 3 or 4 milliampères passed until a little froth is seen to bubble up about the needle. The hair is then withdrawn with an epilation forceps and should come away without the slightest resistance. If it is not thoroughly loosened, the operation should be repeated, several hairs should be removed at a sitting and the treatment followed up till the lid is entirely free.

The patient will experience some little pain during the passing of the current, which is not relieved by cocain; which will, however, render the insertion of the needle practically painless; but so severe is the distress occasioned by the lashes that patients never rebel at a little pain, if it will insure them permanent relief.

Herpes Zoster is a condition in which galvanism has been found empirically of great utility. The distressing neuralgia is relieved by it, as well as the duration of the disease lessened. The direction of the current does not seem to be a matter of great importance, as good results have followed its use, however employed. The anode seems, however, to be preferable on the painful nerve and a current of 1½ to 2 milliamperes for ten minutes every day. I have in this way obtained excellent results in several cases.

Conjunctivitis Granularis.—Among the myriad remedies which have been advocated in the treatment of granular conjunctivitis, electrolysis has found a place and justly, as it is an agent of undoubted utility.

Whether there be any special indications for its use, I know not, save that it must be used in the stages preceding cicatricial contraction. In the use of electrolysis, as in any other treatment of this disease, the natural history must not be lost sight of. The goal to which the case is tending, and the termination which we wish to prevent is the final stage of cicatricial contraction and atrophy. For this reason, any method should be deprecated which involves tissue destruction. All severe applications and operations, although attended by temporary benefit must in the end be harmful, and a current which destroys the deeper conjunctival tissues is even more harmful than a knife.

George Lindsay Johnson has published[1] a very valuable paper on this subject; he points out that in many cases the indifferent success which attends treatment is due to the failure of the applied remedies to remedies to penetrate to the deeper layers of the conjunctiva, and suggests the use of electrolysis. His method is to make scarifications in the conjunctiva, and to follow the track of the scarifier with an electrode. He reports excellent results. The only criticism on his work is that he uses a current of 30 milliampères. I would not feel safe in using a current of anything like this strength in the conjunctiva, and it strikes me as odd that in the paper he deprecates the use of strong currents.

D. T. Myers, of Philadelphia, has also furnished a valuable contribution to the subject of electrolysis in granular conjunctivitis and his method is preferable, in that he uses no scarification and milder currents: he destroys the granulation with a needle, thus sterilizing each sac.

It will require much time and patience in practice, but I have found it to work admirably in the few cases in which I have tried it. The lid can be anesthetized by cocain, and when necessary Myers uses the solid salt; he advises one and one-half to two milliampères, which would be entirely free from objection. Many cases are amenable to treatment, by the ordinary methods; but we will now and then meet cases in practice, which are entirely unrelieved by the antiseptic and astringent applications or even expression, and for such I hope we have a new resource in electrolysis.

Stricture of the Lachrymal Duct.—In occlusion of the lachrymal punctum, and in strictures of the canal, the old treatment of slitting up the punctum and passing probes after dividing the stricture leaves much to be desired. The punctum loses its usefulness as a capillary canal after the operation, and we too often find that the operation which was at first eminently successful, fails to afford permanent relief. It is far preferable, when possible, to dilate the punctum and inject antiseptic solutions, and this procedure is greatly assisted by electrolysis. Several observers have reported favorably on this treatment, and the experiments of Lagrange[2] on the antiseptic action of electrolysis do much to explain its utility. The benefits are not, however, confined to the antiseptic action of the current. It undoubtedly tends to reduce the swelling and hypertrophy of the mucous membrane lining the duct, and the results of the treatment are fortunately much more permanent than by the use of probes alone. When the punctum is occluded, it can usually be sufficiently dilated by a conical probe, to admit a small lachrymal probe into the duct. This is made the kathode, and a mild current of say 2 milliampères passed for three or four minutes; the probe which was at first tightly grasped will be now found to lie loosely in the canal, and a larger one can be introduced. If this is followed up, allowing an interval of a day between treatments, and the injections used at the same time, the treatment will be much less tedious and the results much more permanent.

Lagrange[3] while indorsing the use of electrolysis and reporting good results from it, gives, very wisely, a word of caution against the employment of very strong currents which would produce sloughing and subsequent cicatricial contraction. I have noticed an interesting fact in this connection, viz., that the passing of a probe, made by the kathode with a mild current is much less painful than without the current which is an additional reason for the use of electrolysis. One must remember not to use the anode, as much pain and reaction attends its use and the probe instead of passing easily is even more firmly grasped in the canal than before the current is applied.

Keratitis.—To relieve the blepharospasm, and the distressing photophobia, which does so much to make miserable the little sufferers with this disease, as well as to retard the cure, the constant current is a valuable adjunct to treatment. This is mentioned in Althus, and I have found it of much utility; a current of 2 or 3 milliampères on the closed lids, anode to the eyes for five minutes at a sitting, is, I believe, the preferable method of employment.

Corneal Opacities.—The use directly upon the site of the opacity, with a corneal electrode and a current of from one-half to one and one-half milliampères kathode to the eye is the best, and so far as I know, the only way in which old opacities of the cornea can be at all benefited; under the use of galvanism, in time, old and dense opacities can be thinned down and, if proper care is exercised, no distressing reaction need follow the application.

I have presented this subject in detail to this Association at a previous meeting,[4] and I will only add that my subsequent experience has tended to increase rather than diminish my confidence in the possibilities of the treatment.

Retinitis.—In certain forms of retinitis much can be accomplished by employment of the constant current. In retinitis diabetica, I have obtained most excellent results. Not only has the central scotoma when present, diminished

[1] Archives of Ophthalmology, vol. XIX, p. 269.

[2] Journal de Med. de Bordeaux, August, 1893.

[3] Eleventh International Medical Congress.

[4] The Times and Register, Nov. 21, 1891.

and the vision much improved, but the ophthalmoscopic picture has shown that the effect on the tone of the retinal vessels has been most pronounced. In one case in my practice, a few years since, I had an opportunity to demonstrate this very satisfactorily. The patient was suffering from retinal hemorrhage; small punctate hemorrhages were scattered in the greatest profusion in the fundus, and vision was seriously interfered with. I endeavored for some time to give the patient relief by rest, the correction of ametropia and the like; but the case failed to improve. I then began the use of the galvanic current, diet and medical treatment remaining unchanged. She steadily improved, the hemorrhages cleared up, and the vision showed a corresponding increase. After several months, she was so much better that treatment was discontinued. She remained very comfortable for a year or more, when she again had a recurrence of the hemorrhages and again under treatment made a gratifying recovery. In several subsequent cases, although not having so marked a result, I have been much gratified by the success attending the treatment. I used a current of one to one and one-half milliampères through the closed eyelids, with frequent reversals.

Retinitis Pigmentosa.—Among all the diseases which we are called upon to treat, none are more utterly discouraging than retinitis pigmentosa. The subjects are, as a rule, young and the termination is pretty sure to be, sooner or later, hopeless blindness. In such a condition any faint prospect of relief or retardation would be most welcome; but we are as yet, practically helpless as far as any direct treatment is concerned.

It is surprising that since Dor, in 1873,[5] published reports of improvement obtained by the use of galvanism, we have had so little experience contributed to our meager fund of knowledge. Gunn[6] has reported a few cases as benefited, but the most trustworthy reports thus far at our command are those of Derby[7] and Standish.[8] These experienced observers made careful studies in several cases, observing all precaution against error, and report results which are wonderfully encouraging.

Dr. Derby also publishes a personal letter from Mr. Gunn (June, 1894) in which he writes: "I have followed only one case of those I then published and the improvement has been, or rather was when last seen, permanent."

Dr. Derby presented two cases of retinitis pigmentosa, on which the current had been applied three times a week for three months. The sittings were for five minutes, with six to eight Stöhrer cells. The electrodes were, as a rule, placed on the temples, but sometimes above and on the eye. The results were slight visual improvement and marked increase in the size of each visual field, as shown by the charts; he also mentioned a case treated by Dr. Standish, which Dr. Standish reported in detail at the next meeting of the society. It was of a woman 33 years of age, who had noticed a failure of vision for three years; this had increased very rapidly the three months previous to her first examination by Dr. Standish; her vision was at that time reduced to 12-40 in the right and 12-50 in the left. The night blindness was so great that she could no longer go safely alone on the street at night. The ophthalmoscope showed a number of characteristic star-shaped spots of pigment in the periphery of the fundus of each eye. The field of vision did not extend over 20 degrees in any meridian in either eye. The patient was placed under treatment by the galvanic current, and no other treatment was employed. The sittings were of five minutes' duration and were, as a rule, repeated every five days. The anode was placed on the closed lid; the kathode on the brow or temple; the current employed was not more than that given by four to six Stöhrer cells. The treatment was continued for fifteen months and the result was most surprising and gratifying. There was a constant improvement in vision up to the last three months, since which the vision has remained stationary. Upon one occasion, when the patient absented herself for a period of six weeks, after having been under treatment for four months, the vision and field were found to have fallen off slightly. At the end of the treatment the vision was improved from 12-40 to 12-30 in the right, and from 12-50 to 12-15 in the left; the field from 20 to 75 degrees right; 70 degrees left, horizontal diameters; 60 degrees right and 68 degrees left, vertical diameters. These measurements were made upon a perimeter, and the greatest care was exercised to make the different examinations under uniform conditions. The ophthalmoscopic changes which took place while the patient was under observation were confined to a widening out of the prolongations of each patch of pigment, so that they did not present so characteristic a picture as when first seen. No new pigment patches appeared.

Such results as these should stimulate us to further investigation, and should they be confirmed by good results the effort will be richly repaid.

[5] A. F. O., vol. XIX, p. 342.
[6] Ophthalmic Hospital Reports, vol. X, p. 161.
[7] Transactions Amer. Ophthal. Society, 1886.
[8] Transactions Amer. Ophthal. Society, 1887.

DISCUSSION.

DR. HOLFORD WALKER, of Toronto, said that Dr. Fuller, of Montreal, had been consulted by a physician's wife who six months previously had suffered from la grippe, followed by paralysis of the ciliary muscles. About two weeks ago she had come to him with the suggestion that he should do something for her with electricity. He would like to know what Dr. Alleman would do in such a case.

DR. ALLEMAN replied that the constant current frequently reversed was the most likely to give good results, but the outcome in such cases was very doubtful, some of them recovering very suddenly without treatment, and others proving obstinate under what appeared to be well directed measures.

DR. BEAVER, of Reading, Pa., said he was very much pleased with the success the author had had with electricity in the treatment of so many diseased conditions of the eye. He wished, however, to criticise the paper in one particular, *i. e.*, the importance of considering the element of time. It had seemed to him that most of the papers already presented were lacking in this same particular. In this last paper we had not been told how often the applications were made, how long they had been continued, or the amount of pain produced by them. Just as we need to be precise in stating the doses of drugs, so should we be particular in stating the exact conditions under which we employ electrical treatment. He had never found it necessary to use the very strong currents which had been recommended, either in the treatment of eye diseases or of gynecologic cases.

DR. O. S. PHELPS, of New York City—referred to an interesting case, that of a lady who had been operated upon about one year ago for cataract. From partial blindness in one eye and perhaps half vision in the other, there was total blindness after the operation. The lens was broken up and the cavity filled with opaque matter. He would like to ask the reader of the paper whether he had had any experience with galvanism directed toward causing absorption of any such deposit?

DR. ALLEMAN said he had tried galvanism only in incipient stages of cataract. In the case reported he thought it would accomplish no purpose. As to the remarks of Dr. Beaver, he would say that he was entirely in accord with him regarding the importance of accurately stating the dosage and time of application, and he thought he had done so in most of the instances mentioned in the paper.

DR. CLEAVES said that she thought optic atrophy had not been mentioned by the author. It might be interesting therefore to report such a case, which had been under her care during the last six months. The atrophy was of four years' standing. R. V. was found to be 1-200 with a correction of one dioptre, and L. V. 1-200. The patient could read No. 12 of Jaeger's type. For the first two weeks he received three applications daily of the constant current with from 1 to 5 milliampères, depending upon the tolerance, which varied from day to day. The indifferent electrode which presented an area of eighteen square inches, was placed at the nape of the neck, and the active electrode over the eye. The method was by changing the polarity. Always following the voltaic alternations a mild application of the sinusoidal current was made, with position of electrodes unchanged. During the months of August and September the treatments were not regular. On Sept. 22, 1894, the patient was re-examined by Dr. Francis Valk, who reported that there was a decided improvement in the distant vision, R. V. being 10-200, with a correction of two dioptres = 10-100, and L. V. 20-200 with correction of 1-36 = 20-50. The vision in the left eye had improved about 100 per cent., but otherwise in the examination of the field the appearance of the fundus of the eye was about the same. Symptomatically, the patient was in much better condition. He could now read letters, and could see objects clearly in going about the room and street, which he could not do before the treatment.

The Association then adjourned at 6 P.M.

(To be continued.)

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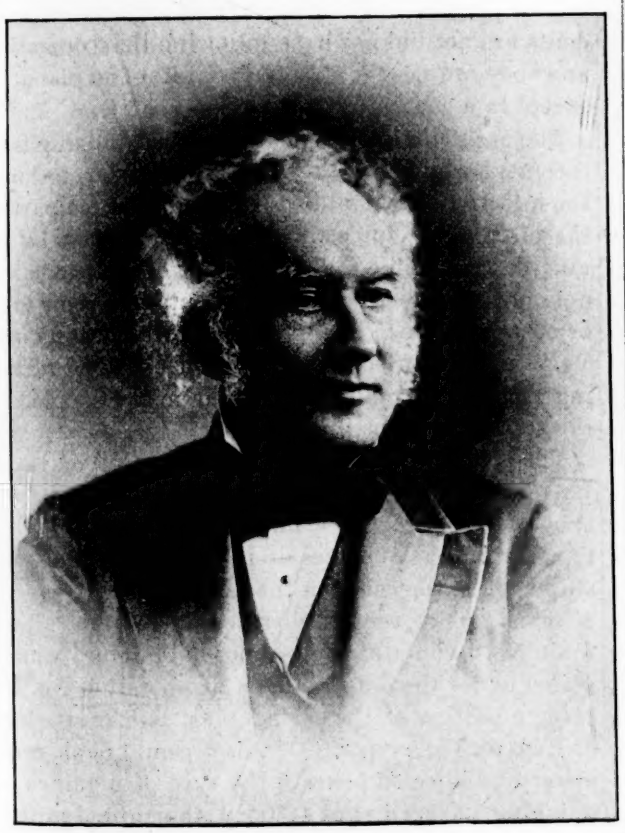
On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 86 Fifth Avenue, Chicago.

SATURDAY, APRIL 13, 1895.

THE STATUE OF PROFESSOR GROSS.



"For if our grief is alleviated by gazing on the pictures of departed friends in our houses, how much more pleasure is there in looking on those public representations of them, which are memorials not only of their air and countenance, but of the honor and esteem with which they were regarded by their fellow-citizens."—PLINIUS EPISTOLÆ.

The day before the adjournment of Congress, that body passed the following public resolution:

[PUBLIC RESOLUTION—No. 21.]

Joint resolution granting permission for the erection of a bronze statue in Washington, District of Columbia, in honor of the late Prof. Samuel D. Gross, Doctor of Medicine, Doctor of Laws, Doctor of Civil Law.

WHEREAS, The physicians and surgeons of the United States of America have raised a fund for the erection of a bronze statue to the memory of Samuel D. Gross, Doctor of Medicine, Doctor of Laws, Doctor of Civil Law, late Professor of Surgery in the Jefferson Medical College of Philadelphia, whose labors in the cause of his profession as surgeon and as author have caused his name to be respected in the civilized world as one of the benefactors of his race, and have added luster to the entire medical profession of the United States; therefore, be it

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That permission be, and the same is hereby granted to the American Surgical Association and the Alumni Association of the Jefferson Medical College to erect said statue in such place in the city of Washington, District of Columbia, as shall be designated by the Superintendent of Public Buildings and Grounds. And the sum of fifteen hundred dollars, or so much thereof as may be necessary, is hereby appropriated, out of any money in the Treasury not otherwise appropriated, for the erection of a pedestal upon which to place the said statue.

Approved, March 2, 1895.

Great credit is due DRS. W. W. KEEN, of Philadelphia, and C. H. MASTIN, of Mobile, for their successful work in securing this public honor for the late PROFESSOR GROSS who as President of the AMERICAN MEDICAL ASSOCIATION and founder of the American Surgical Association, did so much for the elevation of the standard of American Medicine. Mr. Adams from the Committee on the Library, in reporting the bill gave an exhaustive and appreciative review of his life, literary work and services, and concluded as follows:

"The record of such a well-spent life is a valuable lesson, and in the opinion of the committee the erection of a statue to such a distinguished man in civil life will serve as an object of inspiration to the generations to come, as a monument of one of the brightest examples of skill, learning, patient study, dignity and morality that ever adorned the medical profession of our country."

It is well that this statue is to be erected while the generation that knew him in the ripeness of age is still alive, for experience warns us that the duty of commemorating virtue and learning as exemplified in any person, is neglected in exact proportion to the march of time.

SIR WM. TURNER DECLINES.

PRESIDENT DONALD MACLEAN, on behalf of the AMERICAN MEDICAL ASSOCIATION, extended an invitation to SIR WM. TURNER, of Edinburgh, to attend the Baltimore meeting. SIR WILLIAM would have been a welcome guest, for he is recognized in America as in Great Britain, as the greatest living anatomic philosopher. His article on "Anatomy" in the Encyclopædia Brittanica, deserves to rank among the English classics.

In a pleasant response to DR. MACLEAN'S letter of invitation, the venerable anatomist says in part:

"When your letter of February 28 reached me, I was ill in bed with a sharp attack of influenza, and

for some days after its arrival I was quite unable to give it the consideration which was due to it. Nothing could surpass the graciousness and cordiality of your invitation, and it did me good in my illness to think that my professional colleagues in America had been so kind and so considerate. . . . . .

"In many respects I have felt that I ought to accept the invitation of the AMERICAN MEDICAL ASSOCIATION, and to take a part in its proceedings. There are powerful reasons to lead me to do so; the desire to meet distinguished members of my profession in America, the opportunity of seeing under such favorable auspices the beautiful city of Baltimore, and such other of your great cities as time would permit, and to visit your great educational institutions, such as the Johns Hopkins University and its distinguished President, whom I claim as a personal friend; were strong arguments in favor of my accepting this most cordial invitation."

SIR WILLIAM adds, however, that the debility following the grip compels him to decline to attend the meeting.

PRESIDENT MACLEAN, in giving the foregoing information to the JOURNAL, expresses what we are sure will be the voice of the ASSOCIATION—sincere regret, not only that the invitation was declined, but on account of the illness which occasioned the declination.

THE STATE SOCIETY *VS.* THE TRI-STATE.

Under our form of government, the States have the power that regulates manufactures, and the internal affairs of the State. Neither municipal nor Federal authority may meddle with that exclusive jurisdiction.

As Legislatures thus have almost supreme control over the citizens of the State, it naturally follows that all legislation which affects the profession and the direct sanitary interests of the people, must emanate from the State Legislature, and this necessitates similar organization on our part. If the medical profession are to influence a Legislature, it must be done by the State medical organization; no "Tri-State" organization can accomplish anything in the State except at the expense of the different State societies, and even then they can not take the place of the State society. The more the question is studied, the more clear will stand forth the principle that if our profession desires power, influence and consideration, every member of that profession owes it to himself and as well to his colleagues, that he support and maintain his local, State and National medical societies. These societies should be as a holy trinity to the medical man, and the necessary support should be given as a matter of duty.

These three societies surely afford an ample field for all the power, energy and ability that any medical man may possess, and in so far as the "Tri-State" societies weaken the respective State societies, they are directly harmful to the profession by loosening the ties of professional organization.

A FATAL RESULT FOLLOWING A HYPODERMIC INJECTION, BEHRING'S ANTITOXIN BEING THE INJECTED REMEDY.

A death has been reported at Brooklyn following a treatment of diphtheria by means of BEHRING'S antitoxin. The death is stated as having followed the injection in about ten minutes. This lamentable result occurred in the case of a girl in her seventeenth year, in the practice of a regularly equipped physician who had already had some very satisfactory experience in the use of the serum. The case was duly referred to the coroner of the county and an autopsy performed by a competent pathologist. The coroner's findings were inconclusive as to the true cause of the fatal issue of the case. The serum was all used upon the case, but other packages belonging to the same shipment from the same German laboratory were procured and tested.

There was nothing found in this procedure that can justly be held to inculpate the antitoxin used in the case. Experiments were made by the bacteriologists of the Boards of Health of New York City as well as Brooklyn, and these concur in tending to show that the serum was of sound quality, and in leaving the inference to be drawn that the hypodermatic operation itself was at fault. Untoward accidents are not unknown as following that operation, and they are nearly always difficult of explanation except in a general way.

The accident, in this particular case, judging from the great rapidity with which the disaster followed the injection was doubtless a lesion of some part of the circulatory apparatus, although it must be admitted as possible that the bottle of antitoxin was not correctly labeled and really contained some toxin or other substance intended only for laboratory uses. Very little knowledge has yet been obtained regarding possible toxic alterations that may take place in the serum after bottling.

The following is taken from the report of DR. E. H. WILSON, of the Brooklyn Board of Health, and shows the line of experimentation followed by him to ascertain the qualities of the serum, of the same shipment as that used in the fatal case. He says, in effect: "I procured two bottles of BEHRING'S antitoxin No. 2, containing one thousand immunity units, sealed under the date January 30, operation No. 159, being a portion of the same lot as used in the case of BERTHA VALENTINE. Of this serum, 1 cubic centimeter was injected beneath the skin of a guinea pig weighing 420 grams; at 4:30 P.M. the animal suffered no inconvenience from this injection. At the same time 2½ cubic centimeters of the same serum were injected directly into the ear vein of a large rabbit; this animal also suffered no inconvenience. I also obtained from DR. CLAYLAND, coroner's physician, about one ounce of fluid blood received in a sterilized

bottle from the right auricle of the heart. One-half of this blood was given to the chemist of the department for chemic analysis. Direct microscopic examination and cultures made from this blood showed it to be free from microörganisms. Speculative theories may be advanced as to the cause of death in this case, the true cause not having yet been determined, but the above experiments conforming as nearly as possible to the actual condition, demonstrate that the cause was not inherent in the antitoxin."

Dr. W. H. Park, of the New York Board, also experimented with two vials of the same importation of "operation No. 159," and his report states: "I have submitted both vials to thorough tests at the bacteriologic laboratory of the Board of Health, by injecting excessive doses into guinea pigs and rabbits without producing in the animals any deleterious effects whatever. Specimens from both vials were also submitted to bacteriologic tests and were found to be absolutely free from living germs of any kind.

"These results, taken together with the fact that the New York City Board of Health has employed this same make of antitoxin in a considerable number of cases with only the best of results, leads me to express the opinion that the unfortunate results which followed its administration in the case referred to can not be attributed in any way to the antitoxin which was employed."

There have already been many hundreds, if not thousands, of injections made in this country of the imported serum, and this is the first accident of the nature described that has been publicly reported. On the other side of the ocean the number of serum treatments has been vastly greater, with only a very small proportion of untoward results referable to the remedy and not to the operation.

BUFFALO MEDICAL AND SURGICAL JOURNAL.

After a half century of good work in the cause of medical literature, and for the welfare of mankind, the *Buffalo Medical and Surgical Journal* proposes to signalize its semi-centennial anniversary by increasing its reading pages from sixty-four to eighty, and by making other improvements.

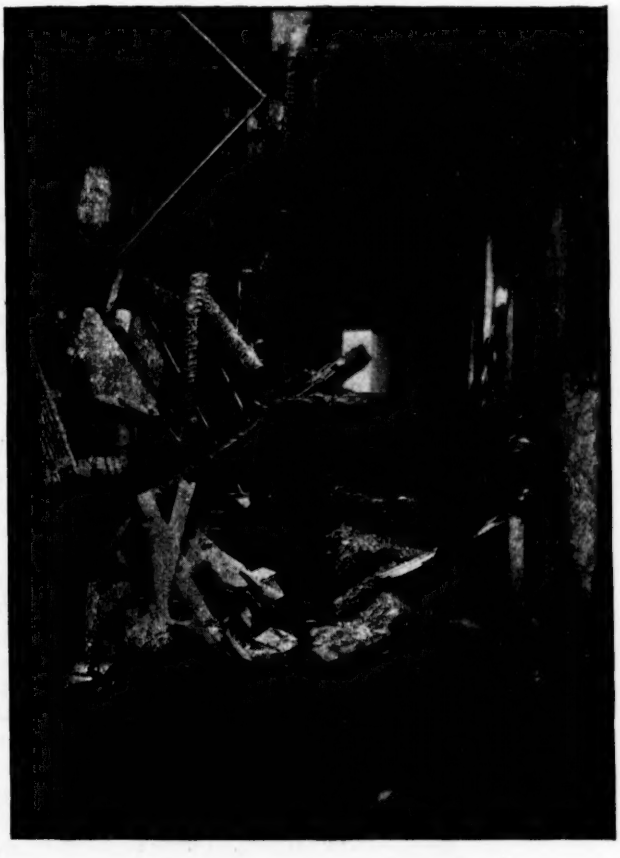
The editors will please accept the congratulations of the Journal of the American Medical Association, on the youthful vigor which still characterizes our Buffalo contemporary despite the fifty winters that have passed away since it was founded. We hope that our contemporary may still be young and as active, when it celebrates its centenary.

PROGRAMS OF THE SECTIONS.

In order to prevent delay in the preparation of the program, Section officers are earnestly requested to send their *manuscript at once to this office.*

AFTER THE FIRE.

We print herewith an illustration showing the appearance of the hallway at the entrance to the office of the Journal, from which the members of the Association will see our narrow escape from a disastrous conflagration. It is a source of gratification that the Saturday issue of the Journal was not only on time, but had the standard number of twenty-eight pages of reading matter. This is the smallest number issued since July, 1893, but it is the same size as most of the other weekly journals in the United States and the size adopted for the four years previous to 1893.



The hallway entrance to the Journal office, after the fire.
[From a photograph.]

We can not commend too highly the prompt and efficient service of the Fire Insurance Patrol of Chicago. Every night since the fire, while the roof has been open and exposed to the rain, the Patrol has promptly appeared and covered up every article in the office with waterproof tarpaulin. To this care and vigilance may be ascribed a large part of the saving that was effected.

Do not forget the Journal Special Train leaving Chicago Sunday, May 5, from Pennsylvania depot, 3:15 P.M. Write for space desired.

Blank Applications for membership in the Association, at the Journal office.

CORRESPONDENCE.

The Case Against the Code.

SAN JOSE, CAL., April 3, 1895.

To the Editor:—I have just received a copy of a circular issued by the Philadelphia County Medical Society under date of March 11, 1895, desiring action by our county and State societies in relation to the character of advertisements that shall appear in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. This circular states among other things the following:

1. "The Code of Ethics—the moral and organic law of the AMERICAN MEDICAL ASSOCIATION—as is well known, not only prohibits physicians from employing secret nostrums, but declares that 'in any way to promote the use of such nostrums is reprehensible.'

2. "The advertising of such nostrums in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, which is taking place, is certainly an attempt to promote their use. The ASSOCIATION appears, therefore, at least tacitly to permit the Editor and Trustees of its official JOURNAL to transgress, in the conduct of the JOURNAL, the law laid down for our guidance as physicians."

It may be recollected that the present writer had something to say a year ago and more, in the JOURNAL, on the question of the revision of the Code of Ethics. I pointed out then some of the glaring inconsistencies as between some of the declarations of the Code and the practices of most members of the profession. I urged the importance of revising the Code that our professions and practice might be in harmony. But the majority at the San Francisco meeting thought that the old creeds had better stand, while we would go on belying them every day.

This Philadelphia County Medical Society assumes an air of immaculateness, innocence and virtue that is refreshing in these days of moral degeneracy and humbuggery. They say the JOURNAL OF THE ASSOCIATION must be immaculate like themselves, and stand on the very orthodox letter of the Code! There must not be the least shadow of a doubt about every medicine and thing advertised in the JOURNAL as being warranted by "The Patent Regulator," the Code. Their chief refrain seems to be in relation to proprietary medicines, forgetting at the same time that the Code also declares that no member of the ASSOCIATION shall patent a surgical instrument or appliance, and inferentially "that he must not use a patented instrument or encourage the use of the same." "*Consistency, thou art a rare jewel!*" What about the patent vibrometers, nebulizers, uterine supporters, artificial limbs, surgical chairs, and multitudinous other instruments advertised in the columns of the JOURNAL from time to time? Should the JOURNAL aid the use of patented instruments any more than proprietary medicines? Philadelphia County Society, stand up and answer!

The Philadelphia County Society may be composed entirely of members who are nothing but the *true blue, Code of Ethics* type of medical gentlemen; but if we can judge of that society by what we know of others, and at such long range, I would seriously question whether their practice corresponds with their preaching. In the first place, how many members of that society use proprietary medicines constantly in their practice? Yea, how many, even, have used antikamnia? How many members of that code-bound society use patented surgical instruments or appliances in their practice? Is it a sin to patent a surgical instrument, but not a sin to use one? Would the members of this society allow a patient to die before they would use a patented surgical instrument, and thus violate the Code? If not, why not?

This society says that a certain class of advertisements that are admitted to the columns of other supposedly respectable medical journals must not be published in the columns of our JOURNAL, as being inconsistent, and contradictory to the Code.

Let us put these gentlemen on the witness stand again: Do the members of the Philadelphia County Medical Society take any other journals than the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION? If so, do not all these journals contain in their advertising columns just the very class of advertisements that they declare shall not be published in our JOURNAL? Why do they take journals which aid and abet the use of secret nostrums or proprietary medicines? In doing so, are they not likewise aiding the use of said remedies?

As I said, in the first place: "Consistency is a rare jewel." If we are guided by an injunction which is much older than the Code of Ethics of our ASSOCIATION, and which reads, "Let him that is without guilt cast the first stone," I wonder how many stones will be thrown? I wonder if the members of the Philadelphia County Medical Society would make the air fairly black with missiles? Our own Augean stables must be cleaned before we insist on a general cleaning up all round. We must "get the beam out of our own eyes."

The only way to have consistency between the Code and the practice of the profession, in regard to patent things in general, is to remove the clause referring to the same from the Code. We know that we are professing one thing and practicing another now; why should the inconsistency continue?

Yours truly,

A. C. SIMONTON, M.D.

Of What Use is the Pharmacopœia?

FORT WAYNE, IND.

To the Editor:—I do not wish to disparage the United States Pharmacopœia in the least, nor to detract from the great merit of a work involving so much conscientious care and science and labor on the part of its authors, but I think I voice the feeling of the profession generally when I ask the question written above.

In England, the College of Physicians has a legal right to inspect apothecaries' shops, and therefore to determine to some extent the nature of their contents. In Germany, Italy, and some other European countries the civil authorities have control over pharmacies, and can fine the proprietors if a specified list of drugs of a specified quality be not kept in stock. But in the United States there is no legal control of pharmacy, except in regard to pharmacists' qualifications, and there is no pretense on the part of physicians to regulate the range of their remedies by the Pharmacopœia. A few druggists are still found who make their salts and tinctures as this authority prescribes; for most drugs and preparations are purchased from reputable wholesale dealers, and from manufacturers whose pharmaceutic laboratories are on a scale calculated to inspire confidence in the purchaser regarding the purity and standard strength of drugs sold. Hosts of small makers, too, compete for the patronage of the physicians, with a pill or tablet or elixir; and the German color makers supply most of the newer and rarer chemicals.

Under these circumstances, the Pharmacopœia seems to be out of gear with the times, and is to be looked on as a kind of survival from the past, like the great auk and the woolly rhinoceros. Yet it is quite possible that there is still a place for a United States Pharmacopœia, provided that the book can be made to suit the conditions of these days. Until then, it is only an expensive luxury, and an unnecessary imitation of works that—under the different laws of European countries—may have some good right of

existence. What number of American physicians use the Pharmacopœia in their practice, or have it in their libraries? What drugstore confines itself to the Pharmacopœia, or cares for it as an authority? What medical college uses the Pharmacopœia as a text-book for teaching materia medica? It was said once that the work "has got away from the medical profession;" but I think it is the profession—including pharmacy—that has emancipated itself from the Pharmacopœia.

In America, our chief use of such a work would be to fix or standardize the nomenclature of drugs. A second use would be to offer a list of drugs that are therapeutically efficient, distinguished from drugs that are valueless or inert, and from new remedies that have not been sufficiently tested. A third use would be to reinforce the decimal system of weights and measures in medical usage; and, to accomplish this, a new weight, the decimilligramme, should be added, and the system must be made to conform better to the *teaspoonful*, until the domestic and convenient measure can be eliminated.

More regard must be paid to the convenience of prescribers; the confusion between waters, liquors, and solutions, syrups, elixirs and glyceroles, tinctures, wines and spirits, and so on, should be abolished. A more extensive list of remedies, with posologic and therapeutic tables might be added. The list of preparations should be as brief as possible—especially of compound mixtures and syrups, and powdered extracts, tablets and troches should be recognized. We should regret to give up the Pharmacopœia; we should be glad to see it radically recast; but, in its present form, we are justified in asking, Of what use is the U. S. Pharmacopœia? W. P. Whery, M.D.

Leprosy Case—Where It should be Reported.

New York, March 31, 1895.

To the Editor:—I beg to state, with reference to one of your remarks in the Public Health columns, of the Journal of the American Medical Association, March 30, as to my not reporting a certain case of leprosy directly to the local Board of Health that I take, in such affairs, a higher ground. According to my opinion, such cases should be reported to a United States Health Officer, and the State or City Board of Health should have nothing to do with them. The State Board of Health would think only of the protection of its own citizens, and would most probably do everything possible to shift the responsibility, that is the expense of the maintenance of the leprous family on some relations or friends of the leper, living perhaps in another State. If the danger was averted from their own vicinity, their particularistic conscience would be perfectly satisfied.

A city board would rather shut its eyes and ears to the proclamation or avowal of existing leper cases, than to undergo all the evils resulting from the reception of such a communication. Think of the New York Chinese lepers who had to be shipped back and forth, to and from Vancouver, in box cars (like cattle), and then to be exposed miserably on the extremity of North Brothers Island, until death separated them still more from human charity, as they had been separated from it before. These things must be trying for any human being whose power and authority decrees them, and we have no reason to believe that the members of our Board of Health have harder hearts than the rest of us.

If these cases were reported to the United States Public Service, the Federal Government would have to protect every State equally, and the United States ships could return the lepers to the place where they came from, without those vain and expensive endeavors to get rid of them by way of Vancouver, whence, as the British steamers declined to receive them, they had to be brought back.

I may add here, that I mentioned this beginning of a leprous condition after the puncture of a fish-bone, to Professor Putnam. He said that while he was helping Agassiz in his investigations on fish, the assistants very often received poisonous wounds, but that these poisonous wounds were always painful. It must be remembered that the wounded place in our leper was anesthetic. Professor Putnam is of opinion that the poisonous element in fish resides in the mucus; for when the bones had been washed with alcohol, or simply dried, no puncture had any poisonous effect.

I must say that it seems to me quite probable that the leper whom I have seen here, had already when he came in contact with that fish, at least the beginning of leprous anesthesia.

Dr. Bristow, of Brooklyn, asked me how I could explain the fact that in my case the tuberculation appeared first on the face, while the inoculation had begun in the finger. I answered that the tuberculation occurring in the face and outer sides of the forearms, and on the back of fingers is supposed by Unna to be due to selection by the bacilli; they established themselves in those regions where the least motion is felt. The occurrence of tuberculation in the exposed parts of the body is the strongest argument for the theory of host-inoculation. Yours truly,

Albert S. Ashmead, M.D.

The Warren Formula.

Roslindale, Mass., March 29, 1895.

To the Editor:—Will you kindly give me the name of the writer of the answer to "Injections in Hernia," printed on page 418, March 16 issue of the Journal? I want to learn the page in Heaton on the "Cure of Rupture" where that formula occurs. As a fact the formula is copied from page 65 of "A Plea for the Cure of Rupture," by Jos. H. Warren, A.M., M.D., LL.D. You will find other formulæ on page 57. Heaton used only oak bark, pure and simple. The formula that you print was first used by my father, Dr. Warren, and was an improvement on Heaton's crude method. Heaton's book was published in 1877. My father's books were dated 1880 and 1884, and were considered authoritative.

I fail to see how such a flagrant mis-statement as crediting the formula to Heaton could possibly have occurred, and I trust a correction will be made at an early date.

Yours respectfully, Chas. Everett Warren, M.D.

Answer.—The prescription mentioned was quoted from Marcy ("The Anatomy and Surgical Treatment of Hernia," New York, 1892, p. 275). He says: "Dr. Warren began operating upon hernia by the Heaton method soon after the author's death. He stated in a note to his second edition, that he is 'convinced the credit of the origination of the method belongs to Dr. Pancoast; that to Dr. Heaton is due the discovery of the exceptional value of the thick extract of the oak bark.' . . . He greatly modified and improved the instruments to be used, both needles and syringe, and changed somewhat the medicamenta employed. Among the recipes commended the following is preferred"—Then follows the prescription given in our issue of March 16, 1895. It is due to Warren to say that Heaton used the fluid extract of white oak bark alone. The alcohol, ether, morphia and tincture veratri viridis were added by Warren. In our answer to our Alabama correspondent we gave the formula without the slightest intention to detract from whatever of merit was contained in the additions mentioned, or the twisted needle of the Warren syringe. Only a part of the editor's library is in Chicago, and in the transfer of a working collection, both Heaton's book by Davenport, and Warren's book were left in his Washington library.

Diphtheria Epidemic at Akron—Use of Antitoxin.

CLEVELAND, OHIO, April 1, 1895.

To the Editor:—Permit me to submit for the columns of Public Health in the JOURNAL the following item:

An outbreak of diphtheria has recently occurred in the Summit County Children's Home at Akron, Ohio. Dr. L. S. Ebright, physician in charge of the Home, and Health Officer of Akron, diagnosed and isolated the first case March 21. This boy recovered after a severe illness of a week's duration. March 27 another boy was taken sick, and the next day the disease appeared in three girls. The Home contains sixty children varying in age from 2 years to 15 years, and fifteen attendants. March 30, after making a preliminary bacteriologic examination of one of the cases, I went to the Home with Dr. Ebright and administered the antitoxin obtained from our (Wooster Medical College) diphtheria-immune horse. The boy who had been sick three days was dying of a profound toxemia, and lived but six hours after my visit. Therapeutic injections of antitoxin were given to the three sick girls at my first visit, also to a new case brought into the hospital March 31. Aside from these therapeutic injections, immunizing injections of the antitoxin were given to *all the children* and *all the attendants* in the Home (seventy in all).

Bacteriologic examinations showed diphtheria bacilli in all of the sick children. The four patients who received the therapeutic doses are doing splendidly. Fever and pulse much reduced and *membrane all gone* in all these cases forty-eight hours after the first injection. No new cases have developed in the last two days among the immunized individuals. Thus far we have been unable to trace the cause of this outbreak, which is entirely confined to the inmates of this institution. There seems but little doubt that the prompt and *liberal* use of antitoxin has saved the Home from a devastating epidemic of diphtheria. Very truly yours,

A. P. OHLMACHER, M.D.

No Smallpox at Little Rock.

LITTLE ROCK, ARK., April 1, 1895.

To the Editor:—In the issue of the JOURNAL for March 23, page 454, under the heading "Health Reports," it is stated that from February 1 to March 8, eighty-two cases of smallpox and fourteen deaths have occurred at *Little Rock!* The report was sent out from the latter place and the error doubtless occurred from that fact, while Hot Springs is the place where the disease has existed and the figures refer thereto. There is no smallpox in Little Rock, but we have the Legislature. Very respectfully, L. P. GIBSON, M.D.

Cold in the Treatment of Pneumonia.

1829 SPRUCE STREET, PHILADELPHIA, PA.

To the Members of the Medical Profession:—My last paper on "Ice-cold Applications in Acute Pneumonia" gives a record of seventy-four cases so treated, and only two deaths.

Being desirous of making a full collective report on this subject, I take the liberty of asking those who have tried this measure to kindly give me the result of their experience with it. Full credit will be given to each correspondent in the report which I hope to publish.

THOMAS J. MAYS, M.D.

The Forty-sixth Annual Session of the AMERICAN MEDICAL ASSOCIATION will be held in Baltimore, Md., on Tuesday, Wednesday, Thursday and Friday, May 7, 8, 9 and 10, commencing on Tuesday, at 10 A.M.

Infantile Scorbutus.

BOSTON, MASS., March 11, 1895.

To the Editor:—In a recent number of your JOURNAL there is a report of a case of infantile scorbutus in which the infant was nursed until three months old, then fed on Condensed Milk and Mellin's Food, upon which she seemed to thrive till she was about a year old, when certain pathologic symptoms were observed. One of the five doctors under whose observation she now passed, made an attempt to change her diet to cow's milk, but its use was abandoned as it caused nausea and constipation. When sixteen months old she was first seen in consultation by the writer of the article, and the diagnosis of infantile scorbutus was made: at this time the diet was changed by him to fresh cow's milk, with no record of digestive trouble.

He says: "The child was put on fresh milk and a rational diet suited to her age. The attending physician gave a little lime water and cod-liver oil for the rachitis. Later, when she came under my immediate care, Thompson's Solution was given for the same purpose. She steadily improved, and would now make a splendid picture for an advertisement setting forth the fact that proprietary foods are always useless and frequently dangerous."

The sweeping statement in the last sentence of the above quotation is not borne out by the record of the case. The writer says earlier in the article that "proprietary foods mixed with water or condensed milk are the most common causes of this disease. Condensed milk alone and fresh milk unduly diluted have also produced some cases." He superseded the Condensed Milk and Mellin's Food with fresh cow's milk; but he entirely ignores, in his summary, the effect of the Condensed Milk, which elsewhere in his article he says will cause scorbutus, and casts the blame wholly on the proprietary (Mellin's) Food, which he nowhere shows to have been the cause of it. It should be further observed that the Condensed Milk, of itself an inadequate food, was "unduly diluted," half a fluid ounce being mixed with eight fluid ounces of water. This half a fluid ounce of Condensed Milk must represent but a small amount of milk, and probably not the total constituents of that small amount, Condensed Milk being usually deficient in fat, and moreover Condensed Milk is not fresh milk.

It was not the Mellin's Food, it was the lack of fresh milk that caused the disease.

We quote from those eminent authors, Dr. Cheadle and Dr. Barlow, to prove that Mellin's Food was not the cause; these authorities the writer of the article also has quoted.

Dr Cheadle states his conclusions in reference to infantile scorbutus as follows, in his work entitled "Artificial Feeding and Food Disorders of Infants," third edition, page 216: "In no instance have I seen the disease arise in an infant at the breast, or when fed on an ample supply of good cow's milk. Oatmeal and water, bread and water, various patent farinaceous and desiccated foods, peptonized condensed milk, sterilized milk, pancreatized farinaceous food and milk, German sausage, bread and butter and tea, beef tea, gravy and bread, in most cases with no fresh milk at all, in a few with a very small amount only, are the dietaries on which I have seen scurvy develop, and, latterly, most often on the peptonized and pancreatized foods now so much in vogue."

Dr. Barlow, in the Bradshaw Lecture on Infantile Scurvy (the London *Lancet*, Nov 10, 1894), says: "Let us turn to the question of food. In the group which I have described, in no single case at the time of onset of the malady has the child been breast-fed. In the great majority, where complete details have been obtained, these infants are found to have been nourished on what may be called 'preserved foods.' In the front rank come the various proprietary infant foods, prepared by the addition of water to certain powders. Then come the different forms of condensed milk, and the proprietary goods made with condensed milk. Then come cases in which, either accompanied by proprietary food or not, fresh milk has been given, but with extreme dilution, during the later stages of infancy."

These quotations from these eminent authors fully sustain our position.

The Liebig formula is a formula for the extemporaneous modification of fresh cow's milk; Liebig utterly condemned the use of farinaceous foods and Condensed Milk. Mellin's Food, a true Liebig food is not a dried milk food; it is not a patent farinaceous or desiccated food; it is not a peptonized or Condensed Milk; it is not pancreatized; *it is* a preparation for the *modification of fresh cow's milk*. Our advertisement which has been running in your JOURNAL and other medical journals for some time, brings this prominently to notice. We have been compelled thus to emphasize this point on account of the great efforts that have been made to promote the use of Condensed Milk as an infant food. And we assert, and our assertion is borne out by facts, that infantile scorbutus, "even now comparatively rare," has only been observed to any degree where condensed and desiccated milk and milk foods and other forms of devitalized milk have been substituted for fresh cow's milk. The directions require the use of fresh cow's milk with Mellin's Food; only as a temporary expedient in case fresh cow's milk is not obtainable should the use of Condensed Milk ever be permitted.

In further confirmation of our position we quote from the report of a case of infantile scorbutus, by Prof. William C. Hollopeter in the *Medical Bulletin*, of Philadelphia: "The duration of the disease was one year, and this long period was consumed by reason of the irritable condition of the gastro-intestinal tract. The slightest change in the diet would provoke a sharp attack of diarrhea. I placed the child on freshly filtered milk, cream, and boiled water, equal parts, which she failed to digest. I then began with freshly peptonized milk, which did well for a short time. Finally I was compelled to resort to equal parts of filtered milk, cream and boiled water, with the addition of two teaspoonfuls of Mellin's Food to each bottle. This seemed to meet the necessities of the case exactly. Meat juice, 3j (4. gm.) t. i. d., and a salt bath every day were also ordered. Medicinally, I prescribed 2 grains (.12 gm.) of the ammoniated citrate of iron in freshly expressed orange juice. This was also too irritating to the bowels, but after reducing the dose so that he might receive 1 grain of the iron and a half drachm of the orange juice twice a day, a marvellously rapid improvement was seen, which soon terminated in complete recovery."

Dr. Cheadle says that fresh milk possesses, in addition to the other essential elements a mysterious anti-scorbutic element. Fresh milk, of necessity, is the antiscorbutic food of infancy. Imperative as its use is, Professor Hollopeter was unable to employ it in the case under his charge until he added Mellin's Food to the fresh milk, when all difficulty ceased.

Mellin's Food, prepared with fresh cow's milk, contains the antiscorbutic element, and it will not produce scorbutus, but on the contrary will prevent it. Respectfully yours,

DOLIBER-GOODALE CO.

ASSOCIATION NEWS.

Secretary's Notice.—The Certificate System.

PHILADELPHIA, March 28, 1895.

Each person when purchasing a ticket to Baltimore must pay full fare, taking receipt of the agent at the time; this signed by the Permanent Secretary at the meeting enables the purchaser to buy a return ticket for one-third fare. These certificates are not transferable, and should one be offered by any one not entitled to it, the ASSOCIATION will be required to pay the penalty. These are good but three days after the adjournment of the ASSOCIATION. The sale does not begin until three days before the meeting. Special arrangement has been made for the American Academy of Medicine, so that its members can obtain tickets early enough to attend its sessions, which begin May 4.

The following railroads have given excursion rates: Alabama Great Southern; Alabama Midland; Atlantic Coast Line; Atlanta & Florida; Atlanta & West Point; Brunswick & Western; Charleston & Savannah; Central Railway of Georgia: Cincinnati, New Orleans & Texas Pacific; East Tennessee, Virginia & Georgia; Georgia; Georgia Pacific; Georgia Southern & Florida; Jacksonville, St. Augustine & Indian River; Knoxville. Cumberland Gap & Louisville; L. & N.; Marietta & Northern Georgia; Memphis & Charleston; Morristown & CumberlandGap; Nashville, Chattanooga & St. Louis; Pennsylvania; Port Royal & Augusta; Richmond, Fredericksburg & Potomac; Savannah, Florida & Western; South Carolina; Southern Railway and Western Atlantic.

Now we have all roads including those under the Western Trunk Line Passenger Committee. The New York & Boston Lines Passenger Committee have just agreed to a fare and a third. This includes Boston & Albany; New York & New England; New York, New Haven & Hartford; Old Colony; Fall River; Norwich; Providence; Stonington. The Boston Passenger Committee adds to these Boston & Maine; Central Vermont; Concord & Montreal; Fitchburg; Maine Central; Portland & Rochester.

The Trunk Line Association, includes the Grand Trunk Railway; New York, Connecticut & Hudson River; West Shore; N. Y. O. & W.; N. Y. L. E. & W.; Del., Lackawanna & Western; Lehigh Valley; Central of New Jersey; Philadelphia & Reading; Pennsylvania; Baltimore & Ohio; Chesapeake & Ohio. W. B. ATKINSON, Secretary.

Section on Neurology and Medical Jurisprudence.—Daniel R. Brower, M.D., Chicago, Chairman; T. D. Crothers, M.D., Hartford, Conn., Secretary.

HYPNOTISM.

1. Hypnotism; its Uses and Uncontrolled Abuses, by William Lee Howard, Baltimore, Md.
2. Medico-Legal Studies of Hypnotism, by Charles K. Mills, Philadelphia, Pa.
3. Medico-Legal Relations of Hypnotism, by Hon. Clark Bell, New York City.
4. Duplex Personality and its Relations to Hypnotism and Lucidity, by R. Osgood Mason, New York City.
5. Difficulties in Eliminating Fraud from Hypnotic Phenomena, by Charles W. Burr, Philadelphia, Pa.
6. Hypnotism in General Practice, by J. S. Eskridge, Denver, Colo.
7. Therapeutics of Hypnotism, by S. Allison Hodges, Richmond, Va.
8. Hypnotism in the Management of Inebriety, by T. D. Crothers, Hartford, Conn.
9. The Psycho-Physics of Sleep, by W. Xavier Sudduth, Minneapolis, Minn.
10. Hysterical Amaurosis and Pseudo-Meningitis, with Report of a Case Treated by Hypnotism, by Hugh T. Patrick, Chicago, Ill.

ELECTRICITY.

11. Observations on some Characteristics and Relations of the Dynamic and Static Forms of Electricity, by A. D. Rockwell, New York City.
12. Treatment of Esophageal Stricture by Electrolysis, by W. S. Watson, Fishkill-on-the-Hudson, N. Y.
13. Sinusoidal Electrical Current and its Practical Uses, by J. H. Kellogg, Battle Creek, Mich.
14. Electro-Therapeutic Technique in the Treatment of Neurasthenia and Nervous Prostration, by G. Betton Massey, Philadelphia, Pa.
15. Electricity in the Treatment of Ocular Neuralgia, by Horace M. Starkey, Chicago, Ill.
16. Electricity in the Treatment of Exophthalmic Goitre, by Robert Newman, New York City.
17. Electric Light Bath; its Uses in the Treatment of Diseases, by J. H. Kellogg, Battle Creek, Mich.
18. Electricity in the Treatment of Chronic Neuritis, by James C. Gill, Chicago, Ill.

EPILEPSY.

19. On the Relation of Sex to the Prognosis of Epilepsy, by William Browning, Brooklyn, N. Y.
20. The Medical and Surgical Treatment of Children before the Epileptic Habit is Fixed, by E. D. Ferguson, Troy, N. Y.
21. Therapeutics of Epilepsy, by Horatio C. Wood, Philadelphia, Pa.
22. Practical Treatment of Epilepsy, by Frederick Peterson, New York City.
23. The Value of Craniotomy in Epilepsy and Imbecility, by Charles L. Dana, New York City.
24. The Technique of Craniectomy for Epilepsy and Imbecility, with exhibition of New Instruments, by Seneca D. Powell, New York City.
25. Reflex Causes of Epilepsy, by Wharton Sinkler, Philadelphia, Pa.
26. Epileptoid Attacks of Reflex Crises Curable by Surgery, by Robert S. Morris, New York City.
27. Supplementary Treatment of Epilepsy, by A. N. Williamson, New London, Conn.
28. Relations of Food to Epilepsy, by Edward M. Schaeffer, Baltimore, Md.
29. The Limitations of Surgical Operations as a Means of Relief in the Cure of Epilepsy, by Thomas H. Manley, New York City.
30. Some Non-Medicinal Suggestions for the Treatment of Epilepsy, by Samuel J. Fort, Ellicott City, Md.
31. A Remarkable Case of Epilepsy, by W. S. Whitwell, San Francisco, Cal.
32. Solanum Carolinense in the Treatment of Epilepsy, by C. S. Barber, Brooklyn, N. Y.
33. Moral Treatment of Epilepsy, by H. M. Bannister, Chicago, Ill.
34. Surgical Treatment of Epilepsy, by Albert Vanderveer, Albany, N. Y.
35. Disorders of Sleep and Automatism in Epilepsy, by Sanger Brown, Chicago, Ill.

OTHER PAPERS.

36. Notes on the Nature and Treatment of Chorea. Based on Seventy-five Cases in Private Practice, by A. D. Rockwell, New York City.
37. Suggestive Criminality, by Arthur McDonald, Washington, D. C.
38. Transcendental Therapeutics, by Richard Dewey, Chicago, Ill.
39. Some Atypical Forms of Tabies, by Theodore Diller, Pittsburg, Pa.
40. Diagnosis in some Forms of Nervous and Mental Diseases, by Irving C. Rosse, Washington, D. C.
41. Reflex Neuroses, by James K. King, Watkins, N. Y.
42. Post-Active Treatment of Narcotic Habitués, by J. B. Mathison, Brooklyn, N. Y.
43. Paranoia Differentially and Medico-Legally Considered, by C. H. Hughes, St. Louis, Mo.
44. Migraine, its Causes and Radical Cure, by J. B. Kellogg, Battle Creek, Mich.
45. The Neurotic Element in Pulmonary Consumption, by Thomas J. Mays, Philadelphia, Pa.
46. The Degenerate Ear, by Eugene S. Talbot, Chicago, Ill.
47. Right Hemiplegia and Aphasia—a Case, by H. M. Lash, of Indianapolis, Ind.
48. Early Recognition and Proper Management of the Mentally Disturbed, by W. S. Watson, Fishkill-on-the-Hudson, N. Y.
49. Alcoholic Coma coming under Police Care, by L. D. Mason, Brooklyn, N. Y.
50. The Responsibility of Opium, Chloral and Cocain Inebriates, by T. D. Crothers, Hartford, Conn.
51. Notes of an Epidemic of Acute Anterior Poliomyelitis, by C. S. Caverly, Rutland, Vt.

Section on State Medicine.—Liston H. Montgomery, M.D., Chicago, Ill., Chairman; Charles H. Shepard, M.D., Brooklyn, N. Y., Secretary.

PAPERS FOR AFTERNOON SESSION—TUESDAY, MAY 7.

1. Address by the President of the Section, by Liston H. Montgomery, Chicago, Ill.
2. Physical Training in Childhood and Youth as a Preventive of Disease, by C. F. Ulrich, Wheeling, W. Va.
3. Hygiene of the Eyes and Ears in Schools, by B. Alex. Randall, Philadelphia, Pa.
4. Anticipative Treatment of Disease, Organically, Functionally and Specifically, by W. G. A. Bonwill, Philadelphia, Pa.
5. Municipal Hygiene, by Geo. T. Maxwell, Jacksonville, Florida.
6. The Proper Relations of National, State and Municipal Quarantine, by Jerome Cochran, Montgomery, Ala.
7. Sanitation, by Archelaus G. Field, Des Moines, Iowa.
8. Depopulation of Civilized Nations, by James W. Cokenower, Des Moines, Iowa.
9. Tuberculosis and Its Prevention, by Chas. E. Winslow, Albuquerque, N. M.
10. Prevention of Tuberculosis by Feeding, by E. Cutter, New York City.
11. The Use of Vaccine Serum in Variola, by Llewellyn Eliot, Washington, D. C.
12. The Necessity for Increased Hospital Accommodations for the Treatment of Contagious Diseases in Large Cities, by Benjamin Lee, Philadelphia, Pa.

AFTERNOON SESSION—WEDNESDAY, MAY 8.

13. The Bath in Modern Medicine, by Chas. H. Shepard, Brooklyn, N. Y.
14. A Practical Demonstration on the Natural Facilities for Water Contamination, by R. Harvey Reed, Columbus, Ohio.
15. Importance of State Government Control of Artificial Agencies that may be Productive of Noises, by Augustus P. Clarke, Cambridge, Mass.
16. Reform in Medical Expert Testimony, by S. S. Herrick, San Francisco, Cal.
17. The Gold in Garbage, by Douglas H. Stewart, New York City.
18 and 19. No titles given. Drs. Cressy A. Wilbur, Lansing, Mich.; F. E. Stewart, Detroit, Mich.
20. Observations on Hydrophobia and the Pasteur Treatment, by Antonio Lagorio, Chicago, Ill.
21, 22 and 23. No titles given. Drs. Granville P. Conn, Concord, N. H.; John L. Davis, Cincinnati, Ohio; W. C. Woodward, Washington, D. C.

AFTERNOON SESSION—THURSDAY, MAY 9.

24. Symposium on Alcohol: N. S. Davis, Chicago, Ill.; T. D. Crothers, Hartford, Conn.; J. H. Kellogg, Battle Creek, Mich.; I. N. Quimby, Jersey City, N. J.; W. B. French, Boston, Mass.
25. Danger of Alcohol in the Grip, by Chas. H. Shepard, Brooklyn, N. Y.
26. Acute Alcohol Insanity as Distinguished from Delirium Tremens, by John Morris, Baltimore, Md.
27. The Influence of Alcohol upon Urinary Toxicity, by J. H. Kellogg, Battle Creek, Mich.
28. Report of a Series of Psychologic Tests, Showing the Effect of Alcohol in Moderate Doses upon the Nervous System, by Drs. David Paulson and Howard F. Rand.
29. The Treatment of Typhoid Fever without Alcohol, by W. H. Riley, Battle Creek, Mich.
30. Six Grave Cases of Typhoid Fever successfully Treated without Alcohol, by Kate Lindsay, Battle Creek, Mich.
31. Alcohol in La Grippe, by C. H. Shepard, Brooklyn, N. Y.
32. Influence of Alcohol on the Blood, by Geo. W. Burleigh, California.
33. Fatality of Surgical Operations in Alcoholism, by I. N. Quimby, Jersey City, N. J.
34. Some Factors in the Solution of the Alcoholic Problem, by F. W. Grosvenor, Buffalo, N. Y.
35. Alcoholic Intolerance and Predispositions, by T. D. Crothers, Hartford, Conn.
36. Alcohol Anesthesia, by L. D. Mason, Brooklyn, N. Y.
37. Does Alcohol ever Act as Food or as a Generator of any Natural Force in the Living Body? by N. S. Davis, Chicago, Ill.

Section on Obstetrics and Diseases of Women.—Franklin H. Martin, Chicago, Chairman; X. O. Werder, Pittsburg, Secretary.

PRELIMINARY PROGRAM, SESSION 1—MAY 7, 2 P.M.

Chairman's Address, Treatment of Fibroid Tumors of the Uterus, by Franklin H. Martin, Chicago, Ill.

1. The Method of good Operations and bad Fibroids, by Joseph Eastman, Indianapolis, Ind.
2. Advantages of Abdominal Extra-Peritoneal Fixation of Pedicle in Hysterectomy for Fibroids, by Joseph Price, Philadelphia, Pa.
3. Technique of new Method of Abdominal Hysterectomy, by Nicholas Senn, Chicago, Ill.
4. Technique of Supra-vaginal Hysterectomy, by B. F. Baer, Philadelphia, Pa.
5. Present Status of Treatment of Fibroids of the Uterus by Electricity, by A. Lapthorn Smith, Montreal, Canada.
6. Abdominal Ligation of the Uterine Arteries for Fibroids, by Byron Robinson, Chicago.
7. Vaginal Ligation of Broad Ligaments for Fibroids, by C. C. Frederick, Buffalo, N. Y.

Discussion.

SESSION 2—MAY 8, 11 A.M.

8. Hysterectomy for Pelvic Suppuration, by J. M. Baldy, Philadelphia, Pa.
9. Indications for Total Hysterectomy, by Augustus P. Clark, Cambridge, Mass.
10. Total Hysterectomy by a new Vagino-Abdominal Method, by Albert H. Tuttle, Boston, Mass.
11. Vaginal Hysterectomy, by Edgar Garceau, Boston, Mass.
12. The Treatment of the Stump in Oöphoro-Salpingotomy—a new Method, by L. H. Dunning, Indianapolis, Ind.
13. The Treatment of Inflammations of Uterine Appendages, by Augustin H. Goelet, New York, N. Y.

SESSION 3—MAY 8, 2 P.M.

14. Hysterectomy for Puerperal Infection, by Reuben Peterson, Grand Rapids, Mich.
15. Suppurative Forms of Ruptured Tubal Pregnancy, by Joseph Price, Philadelphia, Pa.
16. Ectopic Gestation—Its Early Diagnosis and Treatment, by S. L. Jepson, Wheeling, W. Va.
17. Diseases of a Reflex Nature Arising from Pathologic Conditions of the Uterus and Appendages, by W. H. Humiston, Cleveland, Ohio.
18. Two Interesting Cases of Pelvic Surgery, by H. R. Holmes, Portland, Oregon.
19. Subject not announced. By Eugene Boise, Grand Rapids, Mich.

SESSION 4—MAY 9, 11 A.M.

20. Suspensio-Uteri—the proper Method of Performing It and Its Results, by Howard A. Kelley, Baltimore, M. D.
21. Vaginal Fixation in Retro-Fixation of the Uterus, by X. O. Werder, Pittsburg, Pa.
22. Ovarian Dermoids—with Cases, by J. E. Cowles, Los Angeles, Cal.
23. The Treatment of Hemorrhagic Conditions of the Uterus by Zinc Amalgum Cataphoresis, by G. Betton Massey, Philadelphia, Pa.

SESSION 5—MAY 9, 2 P.M.

24. Symposium: (*a*) The first American Symphysiotomy, by George M. Gould, Philadelphia, Pa.; (*b*) Symphysiotomy, by Hugh Hamilton, Harrisburg, Pa.; (*c*) Porro Operation vs. Symphysiotomy, by Byron Robinson, Chicago, Ill.; (*d*) Discussion.
25. The Therapeutic Action of Chloroform in Parturition, by Bedford Brown, Alexandria, Va.
26. Original Studies on the Obstetrical Forceps with Mechanical Demonstrations, by J. J. E. Maher, New York, N. Y.

SESSION 6—MAY 10, 11 A.M.

27. The Vaginal Route for Operations on the Pelvic Viscera, by Tod Gilliam, Columbus, Ohio,
28. Subject not announced. By E. E. Montgomery, Philadelphia, Pa.
29. Subject not announced. By John Milton Duff, Pittsburg, Pa.
30. A new Self-Retaining Perineal Retractor, by A. E. Rockey, Portland, Oregon.
31. Subject not announced. By Llewellyn Eliot, Washington, D. C.
32. Episiotomy, by Frank A. Stahl, Chicago, Ill.

A few changes will be made in the above program. Those reading papers will be limited in time to twenty minutes, those taking part in the discussions to five minutes each. Those presenting papers will do well to prepare very short abstracts containing the gist of the paper, which may be given to the reporters of Eastern journals for publication.

FRANKLIN H. MARTIN, Chairman.

SOCIETY NEWS.

The Nu Sigma Nu Fraternity will hold its thirteenth biennial convention May 13, 14 and 15 at Minneapolis with its University of Minnesota fraters. The Association has a dozen chapters located in the different medical universities and a membership which includes more than a thousand prominent physicians. It originated at the University of Michigan, the parent chapter being at present at Ann Arbor. The object of the fraternity is the intellectual and moral advancement of medical practitioners and the elevation of the standard of the medical profession. The last convention was held during the progress of the World's Fair at Chicago when the following grand officers were elected: President, Dr. John L. Irwin, Detroit, Mich.; Vice-President, Dr. James T. Christison, St. Paul, Minn.; Secretary, Dr. Thad H. Walker, Walkerville, Canada; Treasurer, Dr. F. G. Stubbs, Chicago, Ill.; Historian, Dr. Ransom J. Parker, New York City, N. Y.; Guard, Dr. John H. Macready, Cincinnati, Ohio. Elaborate preparation is being made by the twin cities for the entertainment of the delegates.

Philadelphia Pathological Society.—At the semi-annual conversational meeting of the Philadelphia Pathological Society, to be held on Thursday, April 25, at 8:15 P.M., in the hall of the College of Physicians, northeast corner of Thirteenth and Locust Streets, Dr. George Dock, of the University of Michigan, will deliver an address entitled "Trichomonas as a Parasite of Man." Members of the profession are cordially invited to be present. AUGUSTUS A. ESHNER, Secretary.

Association of American Medical Colleges.—The sixth annual meeting of the Association of American Medical Colleges will occur at the Rennert, Baltimore, Md., at 2 P.M., Wednesday, May 8, 1895.

BOOK NOTICES.

Degeneration. By MAX NORDAU. Translated from the Second Edition of the German work; 8vo, pages 560; cloth. New York: D. Appleton & Co. 1895.

This work is one of the healthiest tonics of the present century. It is seldom a book is written with such originality, with such keen insight into poor, weak and erring human nature, and although the tendency of the book is distinctly pessimistic, yet it is as well that the full measure of the degeneracy of the present age should be exposed and made clear, as that a foul ulcer or sinus should be probed to its extremity in order that a cure may be effected. Nor is it fair to charge this author with being an unreasonable cynic, for "the plain dealing remonstrances of a friend differ as widely from the rancor of the misanthrope as the probe of the surgeon from the dagger of the assassin."

The work is divided into five books—Book I, *Fin-de-siecle;* which comprises four chapters, as follows: I, the Dusk of the Nations; II, the Symptoms; III, Diagnosis; IV, Etiology. Book II, Mysticism, containing six chapters, namely: I, the Psychology of Mysticism; II, the pre-Raphaelites; III, Symbolism; IV, Tolstoism; V, the Richard Wagner Cult, and VI, Parodies of Mysticism.

Book III on Ego-Mania has five chapters, as follows: the Psychology of Ego-Mania, Parnassians and Diabolists, Decadents and Æsthetes, Ibsenism and Friedrich Nietzsche. Book IV on Realism, has two chapters: Zola and his School; and the Young German Plagiarists. Book V, the Twentieth Century, has two chapters on Prognosis and Therapeutics.

It is impossible for an educated man, especially if he be a physician with a metaphysical turn of mind, to begin reading this book without perusing it to the end, as not only is it very interesting reading, but it presents old facts and new theories with such wit and wisdom as to keep one's interest throughout. We can not refrain from giving an extract from this highly original and very timely work. Page 7:

"Let us follow in the train frequenting the palaces of European capitals, the highways of fashionable watering places, the receptions of the rich, and observe the figures of which it is composed.

"Among the women, one wears her hair combed smoothly back and down like Rafael's Maddalena Doni in the Uffizi at Florence; another wears it drawn up high over the temples like Julia, daughter of Titus, or Plotina, wife of Trajan, in the busts in the Louvre; a third has hers cut short in front on the brow and long in the nape, waved and lightly puffed, after the fashion of the fifteenth century, as may be seen in the pages and young knights of Giovanni Bellini, Botticelli and Mantegna. Many have their hair dyed, and in such a fashion as to be startling in its revolt against the law of organic harmony, and the effect of a studied discord, only to be resolved into the higher polyphony of the toilet taken as a whole. This swarthy, dark-eyed woman snaps her finger at nature by framing the brown tones of her face in copper-red or golden-yellow; yonder blue-eyed fair, with a complexion of milk and roses, intensifies the brightness of her cheeks by a setting of artificially blue-black tresses. Here is one who covers her head with a huge heavy felt hat, an obvious imitation, in its brim turned up at the back, and its trimming of large plush balls, of the sombrero of the Spanish bull-fighters, who were displaying their skill in Paris at the exhibition of 1889, and giving all kinds of *motifs* to modistes. There is another who has stuck on her hair the emerald-green or ruby-red *biretta* of the mediæval traveling student. The costume is in keeping with the bizarre coiffure. Here is a mantle reaching to the waist, slit up on one side, draping the breast like a *portiere*, and trimmed round the hem with little silken bells, by the incessant clicking of which a sensitive spectator would in a very short time either be hypnotized or driven to take frantic flight. There is a Greek *peplos*, of which the tailors speak as glibly as any venerable philologist. Next to the stiff monumental trim of Catharine de Medici, and the high ruff of Mary, Queen of Scotts, goes the flowing white raiment of the Angel of the Annunciation in Memling's pictures, and, by way of antithesis, that caricature of masculine array, the fitting cloth coat, with widely opened lapels, waistcoat, stiffened shirt front, small stand-up collar and necktie. The majority, anxious to be inconspicuous in unimaginative mediocrity, seems to have for its leading style a labored rococo, with bewildering oblique lines, incomprehensible swellings, puffings, expansions and contractions, folds with irrational beginning and aimless ending, in which all the outlines of the human figure are lost, and which cause women's bodies to resemble now a beast of the Apocalypse, now an armchair, now a triptych, or some other ornament.

"The children, strolling beside their mothers thus bedecked, are embodiments of one of the most afflicting aberrations into which the mind of a spinster ever lapsed. They are living copies of the pictures of Kate Greenaway, whose love of children, diverted from its natural outlet, has sought gratification in the most affected style of drawing, wherein the sacredness of childhood is profaned under absurd disguises. Here is an imp dressed from head to foot in the blood-red garb of a mediæval executioner; there a four-year-old girl wears a cabriolet bonnet of her great-grandmother's days and sweeps after her a court mantle of loud-hued velvet. Another wee dot, just able to keep on her tottering legs, has been arrayed in the long dress of a lady of the First Empire, with puffed sleeves and short waist.

"The men complete the picture. They are preserved from excessive oddity through fear of the Philistine's laugh, or through some remains of sanity in taste, and, with the exception of the red dress coat with metal buttons, and knee-breeches with silk stockings, with which some idiots in eye-glass and gardenia try to rival burlesque actors, present little deviation from the ruling canon of the masculine attire of the day. But fancy plays the more freely among their hair. One displays the short curls and the wavy double-pointed beard of Lucius Verus; another looks like the whiskered cat in a Japanese *kakemono*. His neighbor has the *barbiche* of Henry IV., another the fierce mustache of a lansquenet by F. Brun, or the chin-tuft of the city watch in Rembrandt's 'Ronde de Nuit.'"

On ego-mania, the author pays his respects to Oscar Wilde as follows:

"The ego-mania of decadentism, its love of the artificial, its aversion to nature, and to all forms of activity and movement, its megalomaniacal contempt for men, and its exaggeration of the importance of art, have found their English representatives among the æsthetes, the chief of whom is Oscar Wilde.

"Wilde has done more by his personal eccentricities than by his works. . . . It is asserted that he has walked down Pall Mall in the afternoon dressed in doublet and breeches, with a picturesque biretta on his head, and a sunflower in his hand, the quasi-heraldic symbol of the æsthetes. This anecdote has been reproduced in all the biographies of Wilde, and I have nowhere seen it denied. But is a promenade with a sunflower in the hand also inspired by a craving for the beautiful? . . . Be that as it may, Wilde obtained, by his buffoon mummery, a notoriety in the whole Anglo-Saxon world that his poems and his dreams would never have acquired for him. . . Oscar Wilde apparently admires immorality, sin and crime. . . . The æsthetes carry themselves as if they were the soul of humanity and make a parade of their contempt for the Philistine. They belong, however, to elements of the race which are most inimical to society, insensible to its tasks and interests, without the capacity to comprehend a serious thought or a fruitful deed. This rabble, which claims for itself a top place in the scale of intellectual rank and freedom from the restraint of all moral laws as its most noble privilege, is certainly baser than the lowest scavenger. Ego-maniacs, decadents and æsthetes have completely gathered under their banner this refuse of civilized peoples, and march at its head."

Had Nordau access to the court papers and to the Marquis of Queensberry in advance of the recent *denouement?* It seems very unlikely; but after all it is critical science which has enabled him thus early to point out the fact that persons of Wilde's stamp are not only "degenerates" but "perverts." We repeat, as it was said in the beginning, that this book will prove to be one of the most healthy tonics to offset the insidious invasions of the false theories of a degenerate age.

PUBLIC HEALTH.

Disposal of Garbage.—There is promise, in the increased attention now being paid to the disposal of garbage by sanitarians, physicians and engineers, of a satisfactory solution of the vexing problem. Recent papers by Drs. Thomas H. Manley and Douglas H. Stewart, of New York City, as well as the paper on the "Collection and Disposal of the Refuse and Garbage of Large Cities," presented by Mr. W. F. Morse at the Montreal meeting of the American Public Health Association, clearly indicate the lines on which this solution must be attained. Possibly Dr. Manley is a little optimistic in his trust that the individual may be educated out of his indolent and thriftless habits and so be made to do any important share of the work necessary for the inoffensive disposal of the waste and refuse his daily life creates. But the effort is certainly worth trying, whether it succeeds in making "this material, now treated as offal and a nuisance, a source of revenue to every householder," or not.

Mortality by Influenza in New York in February.—The monthly *Bulletin* of the New York State Board of Health charges 3,000 deaths to la grippe in the present epidemic. Of this number 1,600 deaths are estimated in the month of February, and 1,400 in January, or 57 each day in the second month against 45 each day in the first month. A like mortality is predicted by the reporter in March. The mortality by influenza is partially masked under an excessively high total by consumption, whose mortality is always accelerated and intensified by that other cause. Deaths from old age as is usual in epidemic winters were precipitated; the enormously large death rate in old people has been repeatedly commented upon as a feature of the epidemic prevalence of influenza in London and Glasgow in the present winter. There was a great increase in the respiratory deaths, and also in that "waste-basket of causes," the unclassified. Of this latter, some of which was influenza doubtless, the total for February was 1,621 in a total of 10,771 deaths; a plan of statement that leaves every subject of comparison dubious and debatable.

Stringent Rules Governing the Pollution of Streams.—The New York State Board of Health has passed certain regulations that have operated very favorably for the protection of the water supply of Brooklyn. As a consequence, the agricultural use of quite a large acreage has been restricted at Springfield on Long Island. The farmers having grievances on this account will sue the city of Brooklyn for indemnification for the lost use of their farm lands that border on that city's water courses. The rules of the State Board were put in force in August, 1894; the particular clause in those rules which seems to have aroused a feeling of antagonism among the Long Islanders is one which prohibits the fertilizing of land within fifty and one hundred feet of the streams. The enforcement of this law will throw into disuse large tracts of land which have heretofore been cultivated as vegetable gardens by the tenants of the houses. This means a great depreciation in the value of the property, the owners say, and they are inclined to question the power of the city to practically condemn the land without the payment of damages. The interested parties are considering the matter with a view of petitioning the authorities to so amend the objectionable law that their tenants may continue in the same old way so far as concerns the cultivation of their gardens.

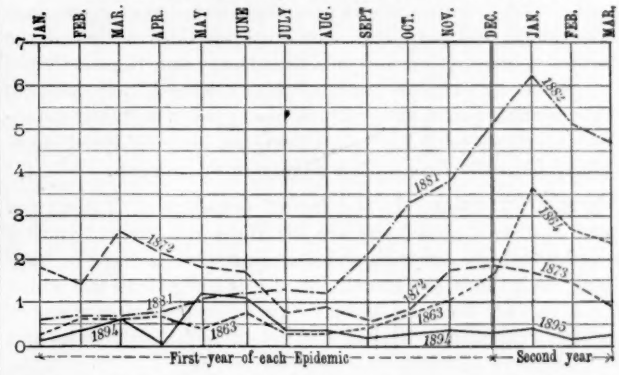
Beef vs. Horseflesh.—What is termed a "beef famine" is now impending in this country, simultaneously with which it is noted that hundreds of thousands of wild horses are roaming our Western plains wasting the grazing needed for cattle. These animals have little or no market value—$2 being the highest quoted price—and yet the consumption of horseflesh is increasing so rapidly in Europe that worn-out horses for which butchers formerly paid only from $5 to $10 are now worth $45 to $50. Mr. E. W. Tingle, United States Consul at Brunswick, Germany, sees here a great opportunity for American packers. Upward of 20,000 horses are annually slaughtered for sausage meat in the Paris abattoirs alone. These animals are carefully examined by competent veterinary authority and only absolutely healthy ones are accepted. The *chevaline*, or horse sausage, has become so popular that the *Commite d' Hygiene* of Paris has been appealed to, to discriminate against its sale by some form of label. The *Commite* has adopted a method devised by two German chemists, MM. Edelmann and Brautigan, of distinguishing between the *chevaline* and ordinary sausage. This consists in adding to a bouillon of the sausage meat, acidulated with a 5 per cent. solution of commercial nitric acid, a few drops of iodized water or Gram's solution, which are allowed to flow down the sides of the tube containing the bouillon. With the horse bouillon there is formed a violet-red-brown ring, which is not developed in veal, beef, mutton, pork, dog or chicken bouillon. As determined by this test, all horse sausages will be henceforth labeled accordingly, but it is not believed that the label will diminish the popularity of the *chevaline*. The proper place for its manufacture is, however, as Mr. Tingle might have suggested, in our Western States where wild horses multiply so rapidly that stallions are declared to be *feræ naturæ* and may be shot down on sight.

Winter Mortality of Chicago.—Dr. A. R. Reynolds, Health Commissioner of Chicago, compares the mortality of the winter quarter of 1895, ended March 31, with the mortality of the corresponding period in previous years. The comparison shows an increase of 27 per cent. in the total mortality of 1894. The total deaths from all causes during the quarter were 6,648—an annual rate of 16.62 per thousand of 1,600,000 population; the average death rate of the corre-

sponding quarter for the previous ten years, 1885–1894 inclusive—was 19.10 per thousand; the lowest in 1894—13.08 per thousand; the highest in 1891—23.40 per thousand. Acute lung diseases, complicated with influenza, are responsible for the increased death rate. This group, pneumonia, bronchitis and influenza, shows an increase of 143 per cent., as compared with the winter quarter of 1894, and pulmonary consumption shows an increase of 12.5 per cent. The Commissioner says that the prevalence of influenza has been more general than is indicated by the number of deaths (142) returned as from that cause. To its complications are to be attributed the great severity and fatality of pneumonia and bronchitis, as well as a large number of non-fatal cases of illness of masked or obscure symptoms which have affected the tone of the general health of the community and especially of the aged and enfeebled. It is, however, the unusual seasonal influences which have caused the increased death rate, rather than the prevalence of influenza. The mean temperature for the month of January was 6.8 degrees lower than the average January temperature of the previous twenty-five years, and the extremes ranged between 9 degrees below zero to 51 degrees above. During February the deficiency in temperature and the range of extremes was still more marked; the mean temperature was 10.7 degrees below the normal, the accumulated deficiency of daily mean temperature at the close of the month was 50.4 degrees, and the extremes ranged from 15 degrees below zero on the 8th of the month to 61 degrees on the 28th—a range of 76 degrees. More than half the month was cloudy or partly cloudy, with an excess of humidity. During this month the deaths from pneumonia rose in number from 163 in January to 444, or nearly one-half of the total number for the quarter.

Concerning smallpox, Dr. Reynolds says: "With the close of the first quarter of 1895, it seems to be entirely safe to say that the fourth serious—and at one time the most threatening—visitation of smallpox upon Chicago is at an end. The disease has steadily declined since June, 1894, that is to say, from a period within thirty days after the great vaccination campaign was fairly inaugurated. That work is now conceded, both in this country and abroad, to be one of the most signal triumphs of preventive medicine on record, and a feat of sanitary administration without a parallel in respect of magnitude and diversity of population dealt with, of successful avoidance of overt opposition to the enforcement of health ordinances and regulations, and of direct results in the prompt check and ultimate suppression of the ravages of a pestilence. In many respects there is a striking parallel between the four great smallpox epidemics in Chicago—the first beginning in December, 1862, and continuing to June, 1864; the second beginning in October, 1871, and continuing to January, 1874; the third beginning in April, 1880, and continuing to June, 1883; and the latest beginning in June, 1893, and now substantially at an end. The features common to these epidemics are the great historic events, involving large movements of population, transient or permanent, which occurred at the corresponding periods, as when, in 1862, during the Civil War, Chicago received large numbers of Confederate prisoners and of immigrants, both of which classes repeatedly introduced the smallpox contagion; again, in 1871–72, when the rebuilding of the city after the Great Fire attracted thousands of immigrants, both domestic and foreign; again, in 1880, when there began the heaviest immigration movement in the history of the country; and, finally, in 1893, the World's Fair year. Preceding each of these epidemics there had been periods of entire freedom from the disease, and the few scattering cases which broke these periods were readily dealt with and created no alarm, so that vaccination became more and more neglected and the aggregation of susceptibles larger and larger until the explosion ensued. In neither of the first three epidemics was it found feasible to secure vaccination on any adequate scale—in fact, Dr. Rauch, in his "Sanitary History of Chicago," says there was no provision for gratuitous vaccination in the epidemic that began in 1862, and that "the neglect of this precautionary measure was the cause of the daily increase of cases which continued for nearly two years after." And again, in speaking of the epidemic of 1871–74, the same eminent authority shows that it was not until "January, 1874, that the diminished susceptibility of the population and the amount of vaccinal protection which had been secured resulted in a marked decrease." In the last preceding epidemic, that of 1880–83, greater effort was made to secure vaccination, but only 48,900 vaccinations were performed in 1881 and 110,540 in 1882—or a little more than 28 per cent. of the population in the two years. It was not until the National Board of Health undertook the inspection and vaccination of every unprotected immigrant arriving in Chicago that this epidemic was materially checked in January, 1883. Last year a total of 1,069,500 free vaccinations were performed—586,000 in the month of May. The accompanying diagram shows the result:

SMALL POX DEATHS, PER 10,000 OF POPULATION



The solid black line indicating the course of this epidemic, shows the highest mortality in May, 1894, when there were 253 deaths, or 1.61 to each 10,000 of population. The decline since then is striking when compared with the broken lines indicating the course of the previous epidemics at corresponding months. The slight increase shown in January was caused by importations from Roby, the drainage canal and other points outside the city; that shown in March, by a colony of negroes from Tennessee and by refugees from the South.

As an epidemic, smallpox ceased in Chicago within thirty days after it became possible to secure an adequate supply of pure and efficient vaccine.

Comparative figures of the four epidemics:

Epidemic of	Highest Monthly Mortality.	Death per 10,000 of Population.
1862–64	January, 1864	3.66
1871–74	March, 1872	2.64
1880–83	January, 1882	6.15
1893–95	May, 1894	1.61

Mortality at the close of the first quarter of 1895, and for corresponding periods:

March, 1864, 2.46 deaths per 10,000 of population
" 1873, 0.95 " " "
" 1882, 4.67 " " "
" 1895, 0.22 " " "

MISCELLANY.

Neurological Infirmary at Flushing, N. Y.—The following named physicians have formed a syndicate for the purpose of establishing at Flushing, Long Island, a hospital to which they can send their patients—Drs. E. G. Janeway, F. S. Dennis, J. D. Bryant, W. T. Bull and E. M. Hamilton. The start will be made with rooms for thirty patients, under the personal charge of Drs. Killilea, Constable and Burchard. The nervous diseases will have the first claim upon the institution.

Lay Comments on a Lithopædion.—A surgical operation was recently performed at the Religio-Medici General Hospital at X——, for the removal of a lithopædion from an adult male. The operation was successful as to the delivery by laparotomy, of the fetal remains, but the parent did not survive. Two ladies traveling in one of our public conveyances were overheard discussing the singular operation. One of them remarked: "So odd, was it not, and in a young man, at that." "Yes," replied the other in a subdued tone of voice, "and a bachelor too."

Dentists' Relations Not Confidential.—During the trial of the case of The People vs. Stonewall J. De France for forgery,

the defense attempted to raise a question of identity, for which purpose they showed that the teeth of the accused were entirely different from those of the person committing the forgery as alleged. In rebuttal, a dentist of Detroit was cited who testified that subsequent to the date of the forgery he had inserted three false teeth in the place of two incisors for De France. The case was carried up on appeal to the Supreme Court of Michigan, on the ground that the trial court had erred in admitting the dentist's testimony, claiming that his knowledge was privileged as between physicians or surgeons and patients. The Supreme Court affirmed the verdict of conviction and held that the terms "dentist" and "physician or surgeon," as the latter are used in the statute covering this point, are not interchangeable and that a dentist's relations with his patient can not be considered confidential as is the case with a physician or surgeon.

Quackery in China.—In the far-off province of Yun-nan of southwestern China there are divisions in medical practice not unlike those America and Europe know. There are "regulars" and there are quacks—and it is difficult to tell which of the two are the more unsafe. A missionary writes to one of our cotemporaries: "Quack doctors are commonly to be met with at every fair and on every market day, and they interfere not a little with the regular and resident practitioners of the city. So far as the people are concerned it makes but little difference which of them treats their cases, for the local and the itinerant doctors are alike ignorant of the first principles of anatomy, physiology or medicine."

Legislation Against Coroners in New York.—Although the present constitution puts it in the power of that State Legislature to wipe out the old and much abused coronorial system, very little progress has been made. A bill has been introduced and shelved at the instance of the present officers, on the ground that the latter should have an opportunity to "examine" the bill. The bill, if accepted, will be very far from satisfactory to the reform element that has in view a complete substitution of the old system, by another resembling the medical examiner system of Massachusetts. There are now four coroners for New York County, with a salary of $5,000 and $3,000 for expenses. If the new plan is adopted there will be, after the term of the present officers shall have expired, one coroner at $10,000 and a like amount for expenses and clerk hire. The most important feature of the bill is one that authorizes the coroner to appoint six qualified physicians as medical examiners at salaries from $3,000 to $5,000. Coroners' juries will be abolished. An inquest will be held by the coroner with a stenographer present to take down the evidence.

Ambulance Cars on Trolley Lines.—Dr. Z. Taylor Emery, Health Commissioner of Brooklyn, it is reported purposes to add a trolley service to the very ample ambulance system of that city. As we believe, Dr. George Homan, Health Officer for St. Louis, has been the first to secure that public service for a city. He attempted to induce the Legislature to pass a law providing for the service, but when this effort failed he succeeded in interesting the officers of the railroad companies in the subject. As a result a trolley car has been equipped as an ambulance and it will soon be running on schedule time over all the trolley lines in the city. It is not intended that the car should take the place of the emergency ambulance service. A large proportion of hospital patients are transferred from houses and could await the arrival of the car on its schedule time. The transfer can be made by the car much more comfortably than by the ordinary ambulances. The St. Louis car is thirty-three feet long and is divided into two compartments by a movable partition. It is lighted and heated by electricity and contains reclining chairs, stretchers and such surgical appliances as may be needed, and is manned by a trained nurse and a surgeon. Dr. Homan believes the car will give great satisfaction not only to the hospitals, but to the people who are compelled to use it.

"Hobbies."—We presume medical journals, like everybody else, have the right to ride hobbies; but when one is ridden to such extremes as our Pittsburg cotemporary does, that of advertising in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, it makes us very weary. We could have some patience with our neighbor's crotchets so long as he practiced what he preached. But now that he is advertising Fairchild's "Panopepton," "Baker's Codliver Oil," "Mackintosh Supporters," "Alloinum," Marchand's "Peroxid," Fehr's "Compound Talcum," Boehringer's Cocain," Parke, Davis' "Kola Cordial," together with patent adjustable eyeglasses, mineral waters without end, Hoff's "Extract of Malt" liquors, wholesale and retail, private maternity retreats, etc., etc., all excellent in their way, but no better or no worse than many of those advertised in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, we think it is time to let up on the old "chestnnt" of advertising in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—*Cleveland Medical Gazette.*

Did Marie Stuart Have the Influenza?—Nothing reconciles your true Briton to any physical affliction so thoroughly as that he shall have shared it in common with royalty. The recent prevalence of influenza in England and Scotland has caused a search to be made for illustrious sufferers from the malady, the latest result of which is that Mary, Queen of Scots, had an attack in November, 1562, of a distemper "which no doubt was influenza." It was thus described by Thomas Randolph in a letter to Cecil: "May it please your Honours, immediately on the Queen's arrival here she fell acquainted with a new disease that is common in this town, called here the New Acquaintance, which passed through her whole Court, neither sparing lord, lady, nor damoiselle, not so much as either French or English. It is a pain in their heads that have it, and a soreness in their stomachs, with a general cough that remaineth with some longer, with others shorter time, as it findeth apt bodies for the nature of the disease. The Queen kept her bed six days. There was no appearance of danger, nor many that die of the disease, except some old folk. My Lord of Murray is now presently in it; the Lord of Liddington hath had it." It may be that the "New Acquaintance" was, in fact, influenza, but Hirsch makes no record of the disease in England until 1688. There was, however, a general diffusion of influenza in Europe in 1557 and in Italy in 1562. Mary left France for Scotland in August, 1561, and it might be presumed that she brought the disease with her if it were not that Randolph asserts that the "New Acquaintance" was already common in Scotland before her arrival.

An Areopagus Needed.—Reviewing Dr. H. M. Bannister's authorized translation of "A Practical Manual of Mental Medicine," by Dr. E. Régis, the *Dublin Journal of Medical Science* discloses in its prefatory remarks, an unusually intimate acquaintance with matters and things American. Referring to the fact that this volume is the first instance of a work treating of mental alienism, written by an alienist, translated by an alienist and, under the direction of an alienist, printed and bound by the insane—the inmates of the Utica Insane Asylum—the *Journal* says: "Recently there has been, at the Utica Asylum, one of those crises which periodically disturb the government of all such places. The lay committee and the medical staff having differed—as we understand, originally on the subtle and difficult question of how far it was the medical superintendent's duty to keep the committee men supplied through the winter with flowers and grapes grown in the asylum greenhouses—it was decided by the more powerful party that changes must be made, and one of these has been to suppress the Utica press, to force the *American Journal of Insan-*

ity to seek more hospitable and civilized quarters, and to deprive of a useful and remunerative employment a large number of the unfortunate patients, who, as usual, are the ultimate sufferers when the medical staff are attacked. But we have not space to more than glance at this somewhat vulgar and brutal exercise of authority, nor can we pretend to any of the inspiration needed for a new Areopagitica. Others must plead for 'the liberty of unlicensed printing, which appears now to require an advocate in the sublime and enlightened Republic of the West."

Solving the Problem of Paternity.—Possibly it is Mark Twain's retort to M. Paul Blouet that is responsible for the story cabled on the 30th ult., by the London correspondent of the New York *Sun*. To the flippant Frenchman's fling—that when a wealthy American had nothing else to do he employed himself trying to discover his grandfather—Twain replied that it was different with the Frenchman, rich or poor; his concern is as to the identity of his father. Now it is alleged that M. Groussier, of Paris, has discovered a scientific means of tracing the paternity of children who know not their own fathers, and adds: "It is easy to understand with what alarm the news of such a discovery will be received in a country where illegitimacy is so common as in France." The dispatch fails to define M. Groussier's law, but quotes MM. Bertillon, Zola and Jules Simon as indorsing the claim. Only M. Rochefort, is skeptical and declares that: "Paternity is like the philosopher's stone—you may look for it as much as you like, but you will never find it;" in which the editor of *L'Intransigeant* seems to agree with Shylock's serving-man, Master Launcelot Gobbo, who says: "It is a wise father that knows his own child." The correspondent declares that M. Groussier is overwhelmed not only by requests to apply his law in individual cases, but by threats of direct evils unless he abandons his inquisitorial investigations into domestic secrets. It is more than likely that the dispatch is misdated; it was evidently intended for the First of April.

Amelioration of Steamship Regulations at the New York Quarantine.—The Treasury Department acting in conjunction with the Health Officer of the Port, Dr. A. H. Doty, has instituted easier conditions for the large steamship companies who bring to the New York harbor so many thousands of first cabin passengers every year. The arrangements are not consummated, but the coming summer travel will probably be provided for in such a way that incoming steamers may pass up as late as 9 P.M. Passengers arriving in New York on the great ocean liners will then be able to leave the ships and take their baggage with them without delay, no matter at what hour of the day or night the ship may reach port. The Treasury Department will soon have the necessary arrangements made by which the baggage of steamers reaching New York after sundown will be inspected and passed at once. At present, if a vessel reaches her pier after the sun goes down, nothing is done until the next day, and though the passengers may leave for the night, they must return for their baggage the next morning. This is a cause of much annoyance, especially to passengers desiring to take trains from New York the same night they arrive. The companies will make a great saving of money by this concession, but they will be obliged, under the arrangements made with Dr. Doty, to provide a powerful diffused electric light for the examination of the passengers. The satisfactory examination of steerage passengers has not heretofore been considered a possible thing after the decline of the sunlight. By the use of a suitable electric lighting plant, carried by each of the vessels, that will come in under the new rules, the medical examiners will be able, it is stated, to pass upon all debatable cases as well after sundown as before. It is electricity, as applied to this use, that has enabled the authorities to venture on the change. Whatever may take place later, it is not proposed to extend the time after 9 o'clock in the case of any of the liners until the present concession has been thoroughly tested. Infectious disease manifesting itself among or from recent immigrants should receive careful attention of local Officers of Health in every State, as a means of determining whether the night admission through the Port of New York is a temporary innovation or a fixture.

Fined for Contempt of Court for Refusing to give Expert Testimony Without Remuneration Therefor.—ACTION OF THE SPRINGFIELD (ILL) MEDICAL CLUB. The decision of Judge Creighton in the January, 1895, term of the Circuit Court of Sangamon County, involving the principle of the payment of fees for expert testimony is of interest to the medical profession.

As a test case an appeal has been taken to the Appellate Court of the Third District which convenes in May. Eventually it will be carried to the Supreme Court.

In a suit for damages for injury caused by a defective sidewalk, brought by Olive Purdy against the City of Springfield, Illinois, Dr. J. N. Dixon was called as an expert witness on the part of the defendant, and as an expert only, and when asked a hypothetical question, declined to answer on the ground that an expert witness is entitled to a different and greater compensation than an ordinary witness is allowed, and that an expert is not required to give expert testimony without compensation as an expert, unless a reasonable compensation shall have been paid or provided for; that he had not been paid nor offered anything for compensation for his expert or professional opinion in the case, a fee (of $10) having been asked for and expressly refused.

The judge said: "It is the opinion of the court that you are not entitled to receive any such fee, but it is your duty to testify as an expert witness."

The witness still refusing to answer, the judge ordered that the hypothetical question be again put to the witness with the warning that if he should refuse to answer he would be held in contempt, saying:

"The court is of the opinion that it is the duty of every person summoned as a witness in this State, to obey the process of the court and to testify, and that it is wholly immaterial whether the man be called from his labor as a mere laborer, or called from his bank, or called from his store, or called from a lawyer's office, or called from a doctor's office; it is the duty of every citizen to respond to the process of the court and answer as a witness, and give the court the benefit of any knowledge he may have of facts, or any knowledge he may have of science or otherwise, which will be of benefit in determining the truth in the controversies that arise between litigants in this State, so far as that can be done by simply giving testimony in open court.

"Of course the court has no power to compel an expert to make an examination outside of court, or to prepare himself to testify, but so far as the witness is able to respond to proper questions propounded to him on the trial of a cause, while he is upon the witness stand, without previously making special preparation or examination to enable him to answer that particular question, I think it is his duty to answer. Especially the court holds is that true of physicians. Physicians in this State are favored children of the State; a department of the State government is maintained very largely for their benefit; they hold a license to practice their profession and practice by grace as well as by right, and are so hedged about and protected by the laws of the State, and by public opinion and confidence, that in five minutes of time a doctor may earn more than an ordinary laborer could earn in a day, and may continue to earn such fees all day long, even on a day he may be required to attend court, except the hour or so devoted to attending on the court. Very much of that is because of the laws of the State which nurse their profession, and by grace which the State and society extends to them in regard to their profession, and when the State through its court calls upon them as experts to help it in an hour of need, they ought to respond as cheerfully and promptly as any class of citizens in the State. The farmer who knows how to plant corn and raise hogs is an expert, the banker is an expert, the section hand on the railroad is an expert, the merchant is an expert, every citizen who is of any value to himself or anybody else is, in some field an expert, and may be called upon sometimes to testify as an expert, and there is no reason why one class should have different rights or other rights than every class has. It is absolutely impracticable to provide a system of expert fees for every class; the banker might claim he could earn a hundred dollars a day, the merchant might claim he could earn fifty dollars a day by attending to his business, the ditch digger might claim he could earn ten dollars by digging in his ditch, and so on along the line. A system of expert witness fees which would give every man who is called upon to testify as an expert, professional compensation would make the administration of justice absolutely impracticable; would amount to requiring the litigant to purchase justice, which the constitution forbids. There is no law in this State that

provides for paying experts professional fees, that is, when they are not called upon to make particular preparation outside court for testifying in the case. If a man who has a case to try wants an expert to examine something outside of court and hires that expert to do it, it is just like hiring a man to do anything else, and whatever he agrees to pay him or whatever the service is reasonably worth he must pay, the same as when any other service is performed under contract or by request. The court could not make any person go outside the court to do any act to qualify himself to testify in any particular case, but the court can compel witnesses to come into court and compel them to answer, so far as they are able to do at the time, every proper question put to them, and that is as true of expert witnesses as of any other, and it is the opinion of the court that this witness ought to answer, and it is the order of the court that he shall answer."

The witness declining to answer, the court found him guilty of contempt fixing his fine at $25.

At a meeting of the Springfield Medical Club held March 27, 1895, the following preamble and resolutions were presented by the committee appointed at a previous meeting and adopted by the society:

WHEREAS, physicians are summoned at times before the courts to give answers to hypothetical questions, independent of a personal knowledge of the facts in the case, answers which impose unusual responsibilities and to this extent are different from the ordinary testimony concerning questions of fact, and on this account are believed to be worthy of greater compensation; and

WHEREAS, in a recent action in the district court it was developed that a judicial opinion of the highest courts in this State on the question of unusual compensation for expert testimony has not been handed down. Therefore, be it

Resolved, That the appeal of Dr. J. N. Dixon from the decision rendered in the District Court should by supported by the medical profession in order that the point of law involved may be definitely determined; and,

Resolved, That this preamble and resolution be submitted to the members of the profession in this State, and the different societies, and their financial aid be requested,

L. C. TAYLOR,
GEORGE F. STERICKER, } Com.
GEORGE N. KREIDER,

Louisville Notes.

SMALLPOX.—Smallpox is unusually prevalent through the State, and grave fears are apprehended that a serious epidemic may be the result of the isolated cases found here and there. Princeton has one case, with rumors of others, Ashland has five cases in the pesthouse, and there were five cases found along the public landing at Cincinnati and one man has died from it in Jeffersonville, Ind., just across the river from Louisville. The cases which developed have almost universally been negroes, and wherever found have been surrounded by many others who are unprotected. The State Board of Health has considered it of enough importance to issue a manifesto, signed by its President, Dr. Mathews, and Secretary, Dr. McCormack, making suggestions looking toward the prevention of smallpox. It is addressed to the "Health Officials, Physicians and People of Kentucky." It states that "vaccination and re-vaccination properly done, with reliable virus, is a certain preventive, and is entirely free from danger. . . . . Although it is a statutory offense to neglect vaccination, and ample authority is given to city councils and county courts to provide for the poor in this regard, it is estimated that over one-third of the people of this State have never availed themselves of it." The circular further calls attention to the penalties for failure to report cases, advises vaccination of all negroes, especially, who come from infected districts. All school children in this city have been vaccinated, and it is believed Louisville is in a good sanitary condition.

ALLEN.—Dr. D. B. Allen, a prominent and wealthy citizen of Warsaw, Ky., shot and killed himself in despondency following the grip, March 25, 1895.

GROOMS.—Dr. S. H. Grooms, until recently a prominent physician of Mercer County, lately of Wilmore, Jessamin County, died on March 28 of pneumonia.

KENTUCKY SCHOOL OF MEDICINE.—The graduating class of this institution has sustained a loss in the death of one of its members, Mr. William Washington Culpepper, of Pleasant Grove, Texas. He died on March 29 at the Hospital of the Kentucky School, of pneumonia.

DEATH RETURNS.—The reports for the week show a total of ninety-two deaths; twenty-two were due to pneumonia, ten to consumption, eight from organic disease of the heart. During the month there were 349 deaths, 92 were due to pneumonia, 22 from meningitis, 35 from consumption. There were eighteen still births. Twenty deaths occurred at the City Hospital.

CHILDREN'S FREE HOSPITAL.—The third annual report of this institution has just been issued. In 1894, ninety-two children were treated and seventy-one of them discharged. In the three years, 264 children sought relief and 243 were discharged. The financial report is as follows:

Jan. 11, 1894—Balance on hand	$1,044.71.
Receipts during the year	4,205 88.
Total	$5,250.59.
Expenses	4,859.15.
Balance	$ 391.46.

There are at present 211 "endowed beds," $2,000 being paid to the treasurer of the endowment fund for the maintenance of each. There are ten "supported beds," $120 annually being required to meet this end. There are seventeen honorary members, each paying $25 annually to the support of the hospital. Thirty-three doctors were in attendance on the patients during the year. There were three deaths in the year. On March 27, that date being the anniversary of the cyclone, which caused the hospital to be founded, the *Courier Journal* was issued and edited by women, containing forty pages, and the proceeds, amounting to something over $6,000, went into the coffers of the Children's Hospital.

Washington Notes.

MEDICAL ASSOCIATION OF THE DISTRICT.—The regular meeting of the Association was held April 2, for the election of officers for the ensuing year, new members, and delegates to the AMERICAN MEDICAL ASSOCIATION. One hundred and forty-five members were present. The election resulted as follows: C. H. A. Kleinschmidt, President; S. S. Adams and J. D. Morgan, Vice-Presidents; J. R. Wellington, Secretary, H. M. Deeble, Treasurer; Drs. Woodward, Mayfield and McLaughlin, Censors; Drs. Cook, Kober, McLain, Acker, Yarnall, Ober, Holden, Stone and Leech, Counselors; delegates to the AMERICAN MEDICAL ASSOCIATION meeting at Baltimore, Md., Drs. S. S. Adams, Acker, Balloch, Bovee, Bryan, Busey, Carr, Chappell, Cook, J. Eliot, Franzoni, Fry, Barker, Heiberger, Hill, Holden, J. Tabor Johnson, W. W. Johnston, Kerr, A. F. A. King, Kleinschmidt, Kober, Lamb, Magruder, Mayfield, McLain, McLaughlin, E. L. Morgan, J. D Morgan, Nash, Ober, Pool, Richardson, Smith, I. S. Stone, J. M. Toner and Woodward. Fifteen new members were elected.

DRS. J. FORD THOMPSON AND S. C. BUSEY.—Dr. Thompson is dangerously ill from septic infection contracted from a cut while performing a complicated abdominal operation at the Garfield Hospital on the 29th ult. Dr. Busey sustained a fracture of the thigh and severe bruises on the 5th inst. He was calling on a patient at one of the fashionable hotels and stepped through an elevator door which had been left open after the car had gone to the floor above and fell through the shaft a distance of fifteen feet, striking on a projecting portion of the gearing. His friends throughout the medical world will be pleased to learn that he is improving rapidly and will recover from the injury.

THE PUBLIC SERVICE.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from March 30, 1895, to April 5, 1895.

Lieut.-Col. JOSEPH R. GIBSON, Deputy Surgeon-General, leave of absence granted on account of sickness, is still further extended six months on surgeon's certificate of disability.

Capt. WILLIAM C. SHANNON, Asst. Surgeon, is granted leave of absence for three months, to take effect on the expiration of his present sick leave, with permission to leave the United States during May and June, 1895.

Capt. RUDOLPH G. EBERT, Asst. Surgeon, relieved from duty at Ft. Huachuca, Ariz., and ordered to Ft. Columbus, N. Y., for duty at that post.

Capt. PAUL SHILLOCK, Asst. Surgeon, relieved from duty at Ft. Wingate, N. M., and ordered to Madison Bks., N. Y., for duty at that post, to relieve Capt. ROBERT B. BENHAM, Asst. Surgeon. Capt. BENHAM, on being relieved by Capt. SHILLOCK, will report in person for duty at Ft. Wingate, N. M.

The following named officers are detailed to represent the Medical Department of the Army as delegates, at the annual meeting of the AMERICAN MEDICAL ASSOCIATION to be held at Baltimore, Md., May 7 to 10, 1895: Lieut.-Col. WM. H. FORWOOD, Deputy Surgeon-General; Major CHARLES K. WINNE, Surgeon; Major WALTER REED, Surgeon, and Capt. HARRY O. PERLEY, Asst. Surgeon. They will proceed from their respective stations in time to reach Baltimore on May 7, and upon the adjournment of the meeting will return to their proper stations.

The following named officers are detailed to represent the Medical Department of the Army as delegates, at the annual meeting of the Association of Military Surgeons of the United States, to be held in Buffalo, N. Y., May 21 to 23, 1895: Lieut.-Col. DALLAS BACHE, Deputy Surgeon-General; Major PHILIP F. HARVEY, Surgeon; Capt. DANIEL M. APPEL, Asst. Surgeon. They will proceed from their respective stations in time to reach Buffalo on May 21, 1895, and upon adjournment of the meeting will return to their proper stations.